

# MARINE REVIEW.

VOL. IV.

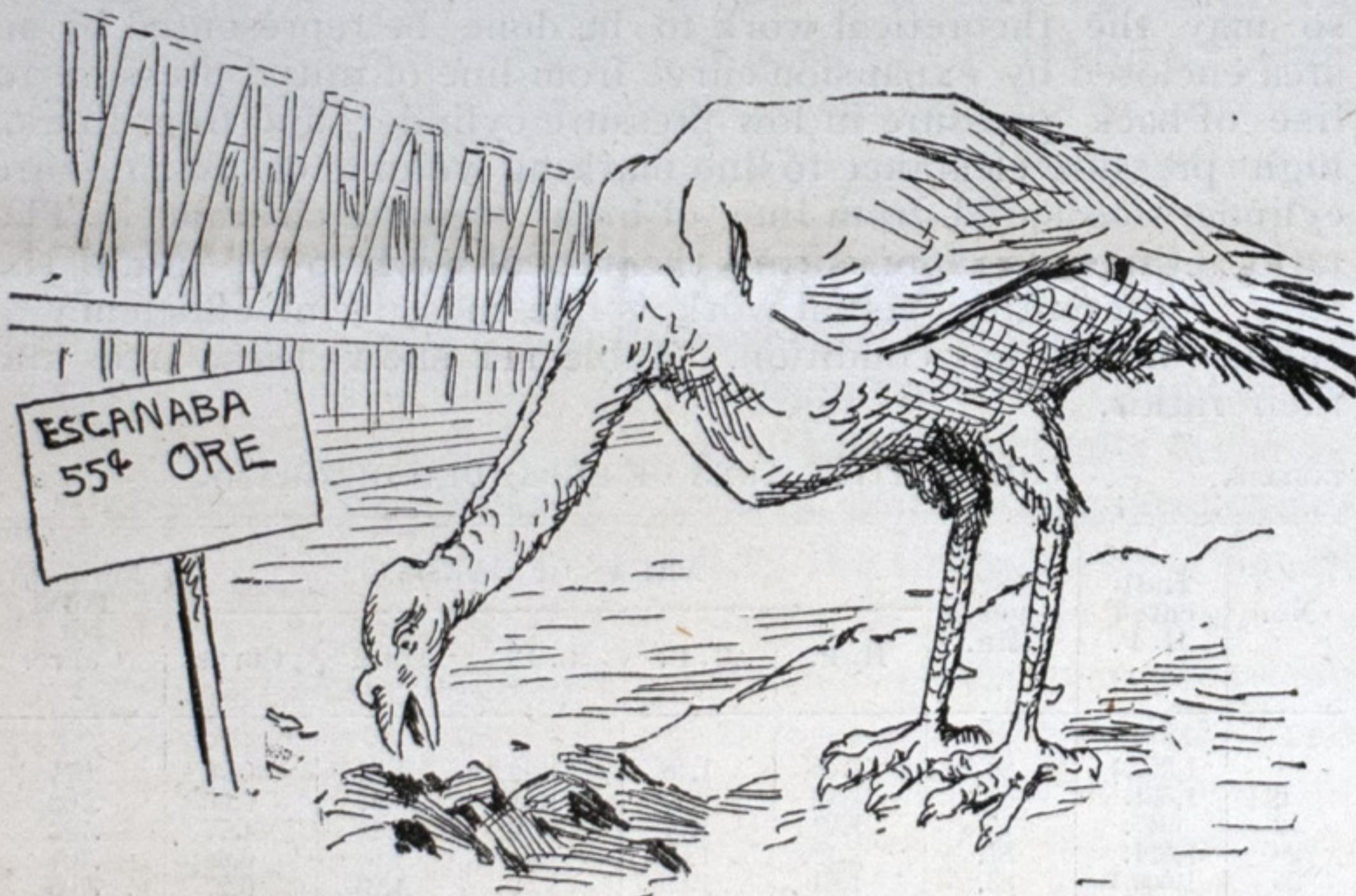
CLEVELAND, OHIO, THURSDAY, NOVEMBER 26, 1891.

No. 22.

## Contract for Whalebacks.

Mr. Samuel Mather of the firm of Pickands, Mather & Co. of Cleveland has placed a contract with the American Steel Barge Company for a steam barge and consort to be constructed after the whaleback model. Mr. Mather is a director in the barge company. The firm of Pickands, Mather & Co., of which he is an active member, controls iron ore shipments from the Minnesota and Chandler mines of the Vermillion range, is closely identified with the Illinois Steel Company and directs the affairs of the Minnesota Steamship Company, in all of which concerns Mr. Mather is a large stockholder. Although the Minnesota Steamship Company has just let a contract for two modern steel ore carriers with the Globe Iron Works Company of Cleveland, one of them to be built at the South Chicago yard. Mr. Mather has undertaken the barge building on his own account.

"I expect" he says "that most of the people in the office of Pickands, Mather & Co. will be interested with me in the barges, and they will be managed in connection with the Minnesota fleet. They will be the largest barges yet constructed,



OPENING.

VESSEL OWNERS' THANKSGIVING.

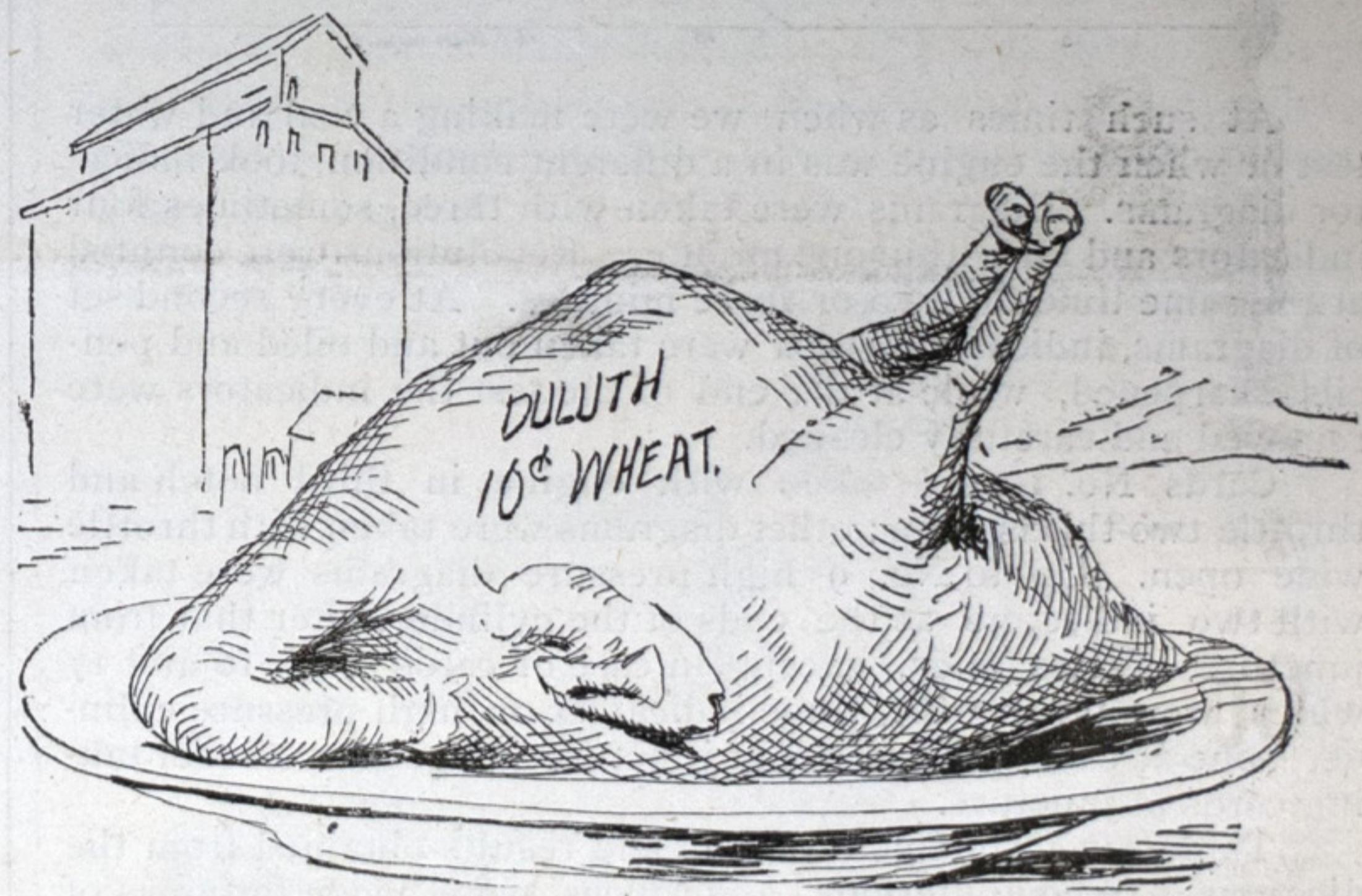
the dimensions of the steamer being 325x42x24 and the tow barge 321x38x24. They are to carry 3,000 tons each from Lake Superior on 14½ feet draft and they will begin service early in the spring. The steamer will have triple expansion engines of about the same power as the Minnesota boats now in service. The engines will be built by the Frontier Iron Works of Detroit and the boilers by the Lake Erie Boiler Works of Buffalo. We have had the Colgate Hoyt and one of the tow barges under charter during the past season and they have given entire satisfaction."

It is also announced through reliable sources, although unofficially, that the barge company has contracted with the Canadian Pacific Railway Company for two freight steamers of the whaleback type, and will also build two on its own account. This will call for five engines, three of which are said to have gone to S. F. Hodge & Co. of Detroit, one to the Frontier Iron Works of the same city and one to the Marinette Iron Works of West Duluth. The Lake Erie Boiler Works of Buffalo will build all of the boilers.

It is proposed to establish in a prominent eastern university a chair of naval architecture to be known as the "Burgess chair," in honor of the great yacht builder.

## Continue Aids to Navigation.

Commander Nicoll Ludlow, light house inspector of the Ninth district with headquarters at Chicago, has been making inquiry among officers of the different organizations of vessel owners on the lakes for information bearing upon the question of time for the removal of aids to navigation. The inquiry is very probably prompted by the demand this fall for a late removal of buoys, light-ships, etc., on account of high freight rates. Whether this disposition on the part of the naval portion of the lake marine to consult with the vessel owners in matters concerning their welfare comes from the Washington officials or from Commander Ludlow, who has already proved himself a courteous and painstaking officer, it is commendable, as conditions of late years has greatly changed matters bearing upon the close of navigation. Big steamers, equipped with powerful machinery of modern construction can brave fall storms that would have swept away whole fleets of the class of craft engaged in the trade a few years ago. Insurance that expired Nov. 15 ten years ago was extended later to Dec. 1 and now to Dec. 30. Why then



CLOSING.

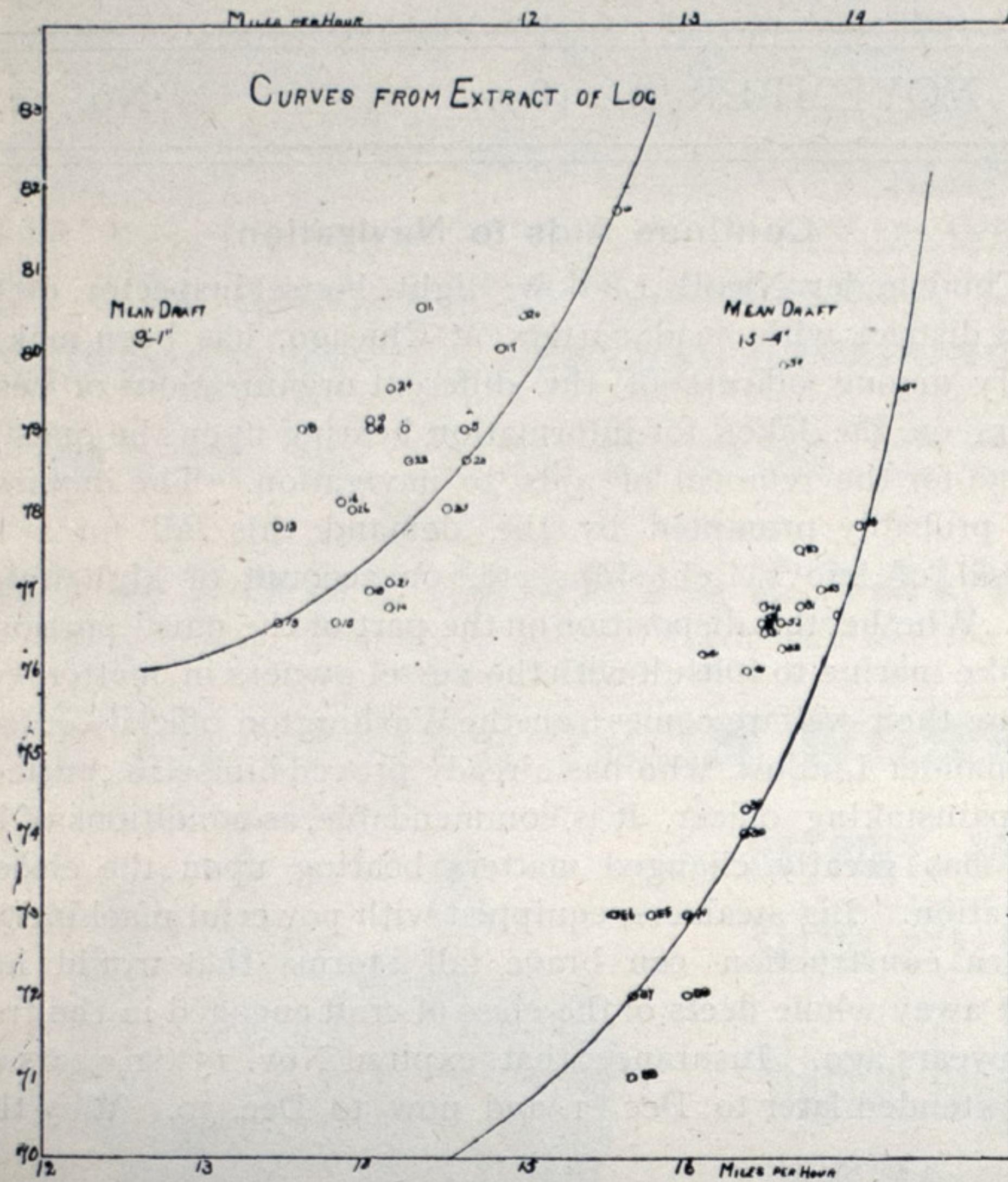
should not the regulations regarding the removal of aids to navigation be changed? The result of Commander Ludlow's inquiry on this subject might well make a basis for orders in future seasons from the light-house board. On paying freights, navigation ends with the modern class of steamers when ice and severe winter weather no longer permit of their running.

## Discriminating Canal Tolls.

Boards of trade in Chicago, Detroit, Cleveland and other leading lake cities have all called the attention of Secretary Blaine to the discriminating system of tolls in operation on the Welland canal and there can be no doubt as to the feeling of lake shipping interests in this matter. The newspapers in all parts of the Dominion have taken to discussing the question, but they avoid reference to the claim that the tolls discriminate against American citizens. One answer is to the effect that Canadian vessels are not allowed to use the Erie or Oswego canals. To any one who is acquainted with the class of boat used and the class of trade on these canals, which is distinctively of a domestic nature, this answer seems technical. The Montreal Gazette and other leading journals outside of Kingston and Toronto have begun to see justice in the protest from American interests and are actually in favor of equal tolls on all freight passing through the Welland whether bound to an American or Canadian port.

## Report of Experimental Trip,

MADE UPON SCREW STEAMER E. P. WILBUR TO THE BUILDERS,  
THE GLOBE IRON WORKS COMPANY, CLEVELAND, O.,  
[BY GEO. C. SHEPARD.]



At such times as when we were making a coal and water test or when the engine was in a different condition, took indicator diagrams. Diagrams were taken with three, sometimes four indicators and all within one minute. Revolutions were counted at the same time for two or three minutes. At every second set of diagrams, indicator pistons were taken out and oiled and pencils sharpened, while at the end of the test the indicators were removed and carefully cleaned.

Cards No. 1 were taken with engine in third notch and throttle two-thirds open; other diagrams were taken with throttle wide open. Up to No. 9 high pressure diagrams were taken with two indicators at the ends of the cylinder, after that from juncture of two ends, except in case of cards Nos. 16 and 17 which were taken with three indicators on high pressure cylinder—one at each end and one at juncture—to get the error of taking cards at juncture.

Table 2 is a statement of data and results obtained from the diagram. In computations, allowances were made for areas of piston rods and low pressure tail rod and each end was computed separately for indicated horse power. So far as the adjustment of the valves, as shown by the diagrams is concerned the lead of the high pressure valves might be increased a little with advantage and all the valves evened up. It will be observed, however, that the indicated horse power of the several cylinders vary considerably; that of the medium pressure is always in excess of that of the high pressure, sometimes to the amount of 17 per cent. and in excess of that of the low pressure 23 per cent., while that of the high pressure is sometimes greater and sometimes less than that of the low pressure, according to speed and vacuum. This uneven distribution of power is against best economy but in this construction cannot be avoided, since points of cut off in separate engines are all fixed together, allowing no adjustment to correct above error.

On Plate 2 can be seen points whose position with reference to certain axial lines represent the value of the ratio of indicated horse power and revolutions as found in the columns on Table 2 or more primarily in indicator diagrams taken. Here also does the difference in draft of vessels make it necessary to draw points with different origins. The reason of digression of points from curve can be explained in several ways, viz: The trim of vessel was changeable, altering at least the surface friction of wheel. Again the amount of injection water by air pump and the effect of the vacuum upon low pressure piston are independent elements in the working of the machine, and do not vary either with steam pressure or rate of rotation. Also even a slight

TABLE 2. PARTICULARS OF INDICATOR DIAGRAMS.

No.	No. In Log.	Engine Notch.	Rev. per Min.	Gauge Readings.		Mean Effective Pressure.			Indicated Horse Power. □			
				Boiler	Vac.	H. P.	M. P.	L. P.	H. P.	M. P.	L. P.	Total.
1	10	3d	80.5	154	22.3	62.	25.3	8.13	468.2	485.7	403.5	1,357.4
2	11	3d	83.5	145	22.7	62.2	28.8	9.6	488.2	573.5	494.3	1,561.
3	13	2d	78.	142	23.	53.8	23.7	7.8	393.7	440.9	375.1	1,209.7
4	14	2d	76.7	130	23.	50.2	22.3	7.32	361.6	407.9	346.4	1,115.7
5	14	2d	77.	133	23.2	50.4	22.9	7.44	364.3	420.5	353.1	1,187.9
7	19	3d	82.5	135	22.5	58.4	25.7	7.86	452.5	505.7	400.8	1,359.
8	19	3d	82.5	140	23.	59.	26.6	8.79	457.	523.5	447.2	1,427.7
9	20	3d	80.6	135	22.8	57.8	25.1	7.89	436.9	482.1	391.7	1,310.7
11	37	2d	73.	120	24.	46.4	21.8	6.96	317.9	380.5	313.3	1,011.7
12	37	2d	70.5	120	23.3	46.2	21.2	6.78	305.8	356.5	284.7	947.
13	38	2d	78.5	150	23.5	56.6	26.6	8.52	413.8	498.8	412.4	1,324.2
14	38	2d	76.5	142	23.5	54.3	25.2	8.34	390.	459.8	393.5	1,243.3
15	43	2d	78.	155	22.5	55.6	26.4	9.48	407.1	491.1	455.9	1,354.1
16	44	2d	79.	155	.....	55.9	28.6	9.54	420.6	538.9	464.8	1,424.3
17	44	2d	78.7	155	23.	55.7	28.6	9.66	417.	536.1	469.8	1,421.9
18	45	3d	80.	150	21.5	61.4	28.3	10.03	461.1	539.9	497.2	1,498.2
19	47	3d	79.5	140	22.	56.8	26.2	9.48	423.8	496.7	464.7	1,385.1
20	51	2d	81.	150	22.	60.8	27.7	10.44	462.4	535.2	523.4	1,521.
21	52	2d	76.	145	22.	50.4	24.7	8.31	359.6	447.7	389.5	1,196.8
22	53	4th	83.	153	21.	67.2	28.9	9.48	523.5	572.3	504.3	1,600.1

pitching was sufficient to effect considerably the revolutions of the wheel with the aggregate mean effective pressure constant.

Two of the most important factors in the economy of a triple engine are the expansion of the steam and the distribution of this expansion, and to enable us to see this more clearly have expanded five sets of diagrams that presented different conditions, drawing diagrams of different engines all to the same scale of volume and of pressure. Because of slight wire drawing through the passages and of the inertia of moving parts of engine, could not locate the absolute point of cut-off, so have drawn a adiabatic curve of expansion P. V. C. tangential to apparent line of expansion in the high pressure diagram, computing the volume for every ten pounds absolute pressure. As the indicated work done is represented by the area of the indicator diagrams, so may the theoretical work to be done be represented by an area enclosed by expansion curve from line of initial pressure to line of back pressure in low pressure cylinder, and from line of high pressure clearance to line marking volume of low pressure cylinder measured from line of high pressure clearance. The ratio of this area representing theoretical work to the sum of the areas representing actual work is one measure of efficiency of engines under that condition. Table III shows these areas and their ratios.

TABLE 3. COMPARATIVE AREA OF EXPANDED DIAGRAMS.

No.	Indi- cated H. P.	Rev. per Min.	AREAS OF CARDS.				Per Cent. Total of Curve.
			H. P.	M. P.	L. P.	Total	
1	1,357.4	80.5	1.44	1.48	1.32	4.21	6.30
2	1,561.	83.5	1.49	1.67	1.51	4.67	6.65
12	947.	70.5	1.08	1.27	1.10	3.45	4.77
20	1,521.	81.	1.42	1.65	1.61	4.68	6.66
25	1,600.1	83.	1.54	1.69	1.50	4.93	6.27

[TO BE CONTINUED.]

## Work of the Minnesota Boats.

An unofficial report regarding the work of the six steel boats in the Minnesota Steamship Company's fleet, now in the grain trade, credits them with having carried 290,944 gross tons of ore from Two Harbors to Lake Erie during the season, which closed with last week. Following is the record:

	Trips.	Tonnage.	Average load.
Marina.....	23	49,777	2,166
Mariska.....	25	53,018	2,120
Maruba.....	24	51,889	2,162
Matoa.....	21	45,660	2,174
Manola .....	23	49,527	2,153
Masaba.....	19	41,073	2,162

The Masaba was late in leaving the shipyard in the spring and the Matoa took a load of grain during September. The round trip distance between Two Harbors and Cleveland is 1,778 miles but these boats averaged seven days to a trip throughout the season and in a few instances it was made in a little over six days, where the Sault river was run without loss of time.

The steamer Matoa, Minnesota line, left Cleveland on the 12th inst. at 2 a. m. for Duluth and arrived at Buffalo with grain at the same hour on the 19th—just one week. She was delayed 24 hours on the down trip by low water in the rivers, so that her actual time was only six days. The distance is 1,844 miles.

## Record of Speed and Big Cargoes.

[Masters or owners are invited to report improvement on this list.]

Iron ore: Lake Michigan—Maryland, Inter-Ocean Transportation Company, of Milwaukee, 3,322 gross, or 3,737 net tons, Escanaba to South Chicago, draft 16 feet 6 inches; E. C. Pope, Eddy Bros. of Bay City, 3,239 gross, or 3,628 net tons, Escanaba to Buffalo, draft 16 feet. Lake Superior—E. C. Pope, Eddy Bros. of Bay City, 2,828 gross, or 3,167 net tons, Ashland to Lake Erie, draft 14 feet 6 inches.

Grain: E. C. Pope, Eddy Bros. of Bay City, 125,730 bushels of corn, draft 14 feet 8 inches; Western Reserve, Peter Minch, of Cleveland, 112,431 bushels of wheat, Chicago to Buffalo; W. H. Gilcher, J. C. Gilchrist, of Cleveland, 114,982 bushels of corn, Chicago to Buffalo.

Speed: Owego, Union Line, of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour; Saranac, Lehigh Valley Line, of Buffalo, Buffalo to Lime-Kilns, 240 miles, 15 hours and 10 minutes, 16 miles an hour.

## Iron Mining.

## VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St. Cleveland, O.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company.....	\$100 00	\$.....	\$ 80 00
Champion Iron Company.....	25 00	.....	76 00
Chandler Iron Company.....	25 00	41 00	.....
Chicago and Minnesota Ore Company.....	100 00	.....	.....
Jackson Iron Company.....	25 00	.....	105 00
Lake Superior Iron Company.....	25 00	62 00	.....
Minnesota Iron Company.....	100 00	.....	81 00
Pittsburg Lake Angeline Iron Co.....	25 00	.....	145 00
Republic Iron Company.....	25 00	25 00	27 00
Ashland .....	25 00	.....	.....
Section Thirty-three.....	25 00	6 00	.....
Brotherton.....	25 00	2 00	2 50

Mining stocks are still very dull but where any change at all is made in values of the higher grade of stocks it is in the direction of better prices. Owners of stock in the Chicago and Minnesota ore company who agreed some time ago to give up their stock to the Minnesota Iron Company in return for shares in the latter company, have done so, but have not as yet received the Minnesota stock in return. The deal is being carried out satisfactorily, however, and in consequence of the control of the Chandler mine thus coming into the hands of the Minnesota, Mr. D. H. Bacon takes the presidency of the Chandler mine on Dec. 1. Joseph Sellwood, general manager of the Chandler, and Supt. Pengilly will retire and the Chandler virtually becomes a part of the Minnesota mine. That a more active development of the 24,000 acres of land owned by the Chicago and Minnesota company will follow, there seems to be little doubt. A large portion of this property is located on the western Mesaba range, where recent development has shown large quantities of ore. On account of the refusal of some of the mining companies on the Marquette and Menominee range to give the information, shipments from all mines on these ranges have been withheld. It has been learned, however, that the lake and rail shipments of the Lake Superior company will foot up about 316,000 tons, Republic slightly under 200,000 tons and Champion about 135,000 tons.

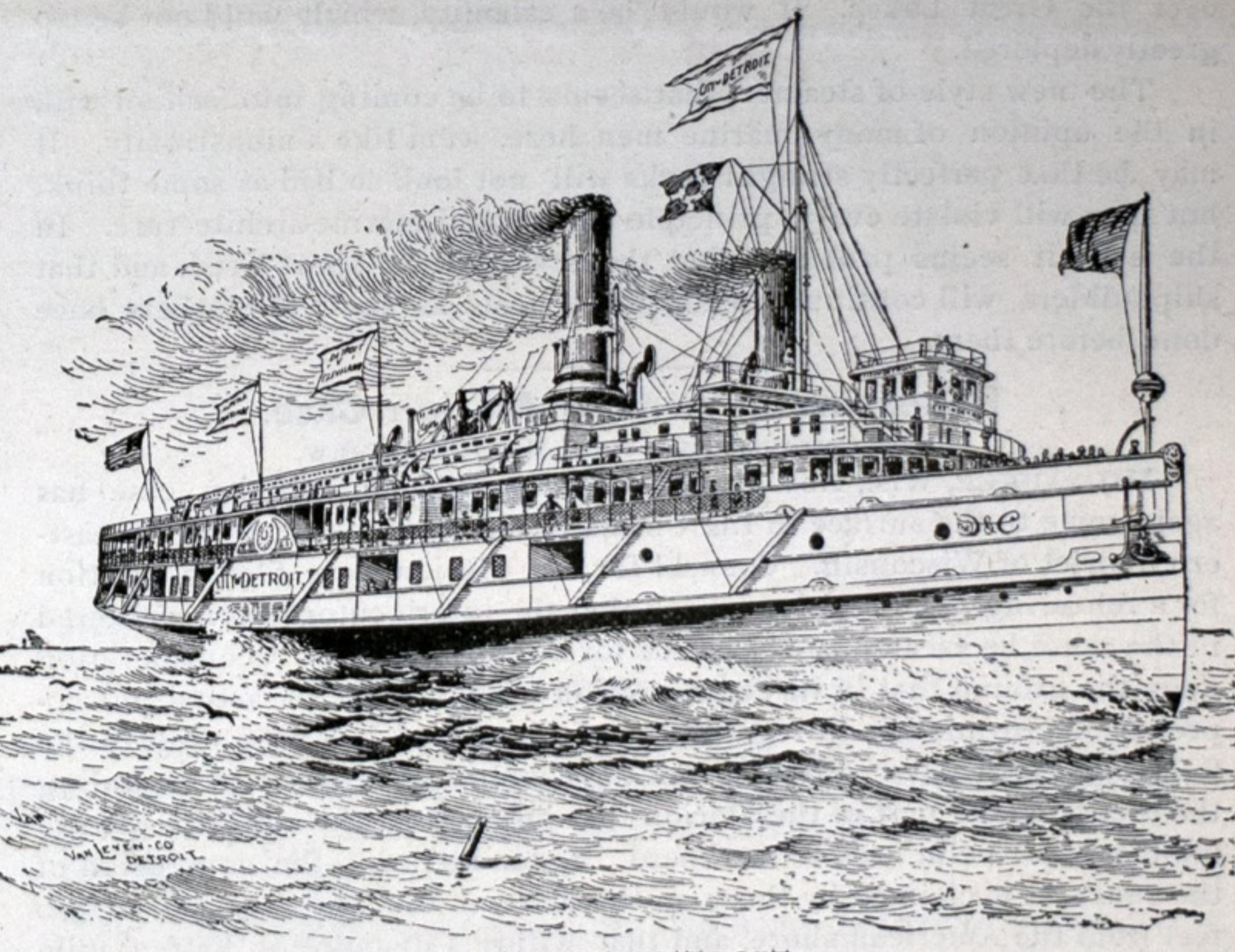
Ore shipments from Two Harbors and Ashland are at an end and the last few cargoes are leaving Marquette. It would seem now from the diversion of almost the entire lake fleet to the grain trade that the entire output of the Lake Superior region for the year 1891, including rail shipments which will be hardly more than 300,000 to 400,000 tons, cannot exceed 6,750,000 tons, as against a little more than 9,000,000 tons in 1890. The great bulk of the falling off is from Ashland, where the shipments on Wednesday, the 18th inst., were only 1,233,833 tons as against 2,109,000 tons for the season of 1890. Shipments from Two Harbors, also to the 18th inst., were slightly in advance of the total for 1890. The Minnesota mine had shipped 502,531 tons, the Chandler 369,481 tons and the Pioneer 3,049 tons. Two Harbors' shipments for the season will show a gain of about 35,000 tons, the great bulk of which is credited to the Chandler. Shipments of the Gogebic range mines from Ashland on the same date (these mines also ship ore from Escanaba and by rail) were as follows: Ashland 250,924 tons, Aurora 82,624, Tilden, No. 2, 5,221, Tilden 23,194, Montreal, south vein 56, 133, Palms 32,237, Section 33, Bessemer, 38,576, Carey 92,963, Trezona 15,759, Germania 22,382, Iron Belt 1,506, Mount Hope 100,976, Norrie 242,771, East Norrie 111,165, Comet 10,144, Federal 929, Eureka 12,752, Pabst 83,061, Ruby 913, Sunday Lake 54,419, total 1,233,833 tons.

The Chandler mine continues producing about 2,000 tons a day or about 45,000 to 50,000 tons a month, and there is little doubt that an output of 500,000 tons can be secured from the mine in 1891 if the iron market will warrant such a production. Preparations now under way at the Minnesota will also result in a very heavy production next year if it is decided to push mining operations. Only a few days ago a body of ore containing, it is said, about 100,000 tons was unexpectedly uncovered at the Minnesota.

At the Iron Belt mine, a Gogebic range property controlled by Cleveland capitalists who are interested in the Standard Oil Company, there is said to be 25,000 tons of ore of a splendid quality in sight at a new shaft. It is thought that 100,000 tons can be placed in stock piles this winter. The company mined no ore during the past season, on account of the low range of prices.

## Detroit and Cleveland Steamers.

On account of its elegantly equipped side-wheel steamers, the Detroit & Cleveland Steam Navigation Company, operating between Cleveland on Lake Erie and Mackinaw in the Straits, ranks among the finest passenger lines in the country. The boats compare favorably with the famous Long Island sound steamers, and the two running between Cleveland and Detroit, the City of Detroit and City of Cleveland, are very fast, as shown by the log extract printed below. The danger of high speed in a long stretch of shallow river between Detroit and Lake Erie is to some extent a bar to the fast time, but only in a few instances each spring and fall is there any deviation from the schedule. A boat leaving each end of the route at bed-time makes the run of about 105 miles before daylight. The steamers of this line were built by the Detroit Dry Dock Company, and are models of the class of passenger steamers they turn out, in points of speed, safety and comfort.



CITY OF DETROIT.

The log abstract is as follows: Trip from Detroit to Cleveland, Oct. 8 and 9, 1891—

LEAVING.	TIME.	MILES.
Detroit .....	11:58 p. m. Oct. 8....	.....
Grassy island light.....	12:23 a. m. " 9....	8 1/2
Mama Juda light.....	12:30 " 9....	2 1/2
Lime-Kilns' dock.....	12:46 " 9....	5 1/2
Bois Blanc light.....	12:56 " 9....	2 1/2
Bar point light-ship.....	1:29 " 9....	5 1/2
Colchester light.....	2:06 " 9....	12 1/2
Point au Pelee light.....	2:55 " 9....	15
Dummy light.....	3:14 " 9....	5 1/2
Cleveland piers .....	5:51 " 9....	48

Whole run..... 5 hours, 53 min.... 105 1/2 [Average speed 17.93 miles per hour.]

The boat was checked in smoke just before arriving at Cleveland piers. Her freight was 116 tons and the fuel ordinary cheap coal.

## CHICAGO LAKE INTERESTS.

WESTERN OFFICE, MARINE REVIEW,  
No. 210 So. Water Street, CHICAGO, ILL., Nov. 26.

Never, perhaps, in the history of the package freight traffic has there been such a rush as at present. The loss to the Union Line by reason of the Chemung losing her rudder will be most serious, as it will interfere with all the plans of handling its share of the great traffic. Some of the lines have been endeavoring to secure outside boats to carry package freight for the balance of the season, but they have not met with success. It is quite likely, however, that the Ogdensburg Transit Company's steamers, which are to winter here, will make a trip to Buffalo and return for some of the other lines, when the time is too short for a round trip to Ogdensburg.

There is a good deal of talk going around about boats to carry passengers between Jackson park and the center of the city during the World's Fair. One enterprising fellow in New York announces that he has formed a company to build immense steamers, fitted up with all hotel accommodations, for the traffic. They are to have three decks, and be something immense. Other schemes are on foot here for building immense boats or ferries for the trade. Now, as a matter of fact, the fair will begin in May and end in October. For the first month and a half there will be no traffic by lake, and under ordinary conditions no one is going to sail a boat to Jackson park after September 10. The boats that are planned will have to pay for themselves inside of three months. Chicago weather is most uncertain, and during at least a third of the three months the lake will be too rough to attract people for a ride, when they can go by cars much quicker. The boats will have to pay for themselves in this limited time, because as they are now talked of they will be of no use anywhere else. It may be that some capitalists will be sanguine enough to put two or three million dollars into such boats, but I don't believe it. The whole thing is wind. There are enough boats already on the lakes to take every man woman and child who visits the World's Fair by the water route to Jackson park and return. It will require no great effort to get an adequate fleet here to care for that traffic, without discommuting the regular passenger business. If, however, some enthusiast has sufficient pull to enlist capital into building a large number of steamers for the Fair, every legitimate line will be the sufferers afterward. The new boats will still be here after their occupation is gone, and some place must be found to run them. The result cannot be but the total demoralization of passenger traffic all over the Great Lakes. It would be a calamity, which could not be too greatly deplored.

The new style of steamer that seems to be coming into fashion will, in the opinion of many marine men here, seem like a monstrosity. It may be that perfectly straight decks will not look so bad as some think, but they will violate every principle of accepted marine architecture. In the end, it seems probable that the style will be short-lived, and that shipbuilders will continue to construct boats as their forefathers have done before them.

## Rehearing in Armour-Marion Case.

Special Correspondence to the MARINE REVIEW.

MILWAUKEE, Wis., Nov. 26.—The Armour-Marion collision case has again come to the surface in the United States district court for the eastern district of Wisconsin. Counsel for the Marion have filed a petition for a rehearing. The petitioners ask that the interlocutory decree entered in the cause be vacated and set aside for a rehearing and reconsideration upon the ground that in its consideration by the court an actual misapprehension or mistake in regard to the facts proved had been made in the following particulars: First—From the conclusion of the court regarding the theory on the part of the Marion that just before the collision the Armour put her helm hard to starboard. Second—From the conclusion of the court "it is claimed by those on the Armour that she was 200 to 300 feet from the American shore, and that within a distance of half a mile until colliding the Marion showed both her lights." Third—From the conclusion of the court, "I am satisfied that the Armour was further out toward the channel than anyone speaking for her has stated." Fourth—From the conclusion of the court, "that both lights of the vessels were observable to each other until a moment before the collision." Fifth—From the conclusion of the court, "that the Marion twice sounded two blasts of her whistle, once in reply to the Mt. Clemens and once in reply to the Armour." Sixth—From the conclusion of the court, "that at the time the vessels were one mile apart, and when the Armour blew her first signal, the Marion was nearer the American shore than the Armour." Seventh—From the conclusion of the court, "that when within half a mile of each other the Armour blew one blast of her whistle and then or soon after stopped her engine." It will be remembered that immediately after having rendered the decision holding both the Armour and Marion at fault and ordering a division of the damages Judge Jenkins started on a trip to Europe. This was in June last. He returned again in September, and since then has been an invalid. At one time quite recently it was thought that he would die, but he is now advancing rapidly toward convalescence and may soon be able to resume his place on the bench. When

that time arrives the petition for a rehearing will no doubt be one of the first matters to receive his attention.

F. Kraus & Co., lessees of the St. Paul A elevator to which the heavy shortages referred to last week were credited, expressed themselves satisfied that the errors in weight rest with their house and will settle as soon as statements of reweighing, accompanied by necessary affidavits, are received from Buffalo and Oswego. Following is a correct statement of the shortages which they will be called upon to make good: Steamer John Duncan 287 bushels of barley, steamer Hecla 872 bushels of barley, steamer Helena 537 bushels of oats and 579 bushels of barley, 1,116 bushels in all, steamer Marion 1,888 bushels of barley, making a grand total of 4,163 bushels on four cargoes. To this settlement must be added 200 bushels of flax seed which the steamer Helena fell short on a previous trip.

The schooner City of Erie, which recently went to pieces at Gill's Pier, Mich., was originally a Canadian bottom, having been built in the 50's near Kingston. She first bore the name Liverpool, and this was subsequently changed to Toronto. Later on the craft fell into United States marshal's hands at Erie, and after sale under the hammer she was Americanized and her name changed to City of Erie. The old craft was always an eye-sore to those who owned her, and never made any one rich.

## A New Lumber Carrier.

Special Correspondence to the MARINE REVIEW.

SHEBOYGAN, Wis., Nov. 26.—Rieboldt, Wolter & Co. are getting ready to lay the keel of a steamer designed particularly for the lumber trade. She will have 165 feet keel, a length over all of 180 feet, 34 feet beam and 11 feet hold. To overcome what will strike experienced vessel men as a very weak point in the craft, viz., her shoalness, the hull is to be diagonally cross-strapped and provided with heavy steel arches. It is also the intention to give her floor more than ordinary strength. She is to have a steeple compound engine with cylinders 20 and 32 inches in diameter and 36 inches stroke. Steam is to be furnished by a marine boiler 8 feet in diameter and 14 feet long. In general appearance the craft will resemble the John Schroeder, built at the same yard, although she is to be somewhat sharper with the view of attaining speed. Her carrying capacity is figured at 650,000 feet. The steamer will be the property of the builders, with Conrad Starke as managing owner.

Capt. Breyman and others of Toledo have made overtures for the purchase of the new dredge of the Sheboygan Dredging and Docking Company.

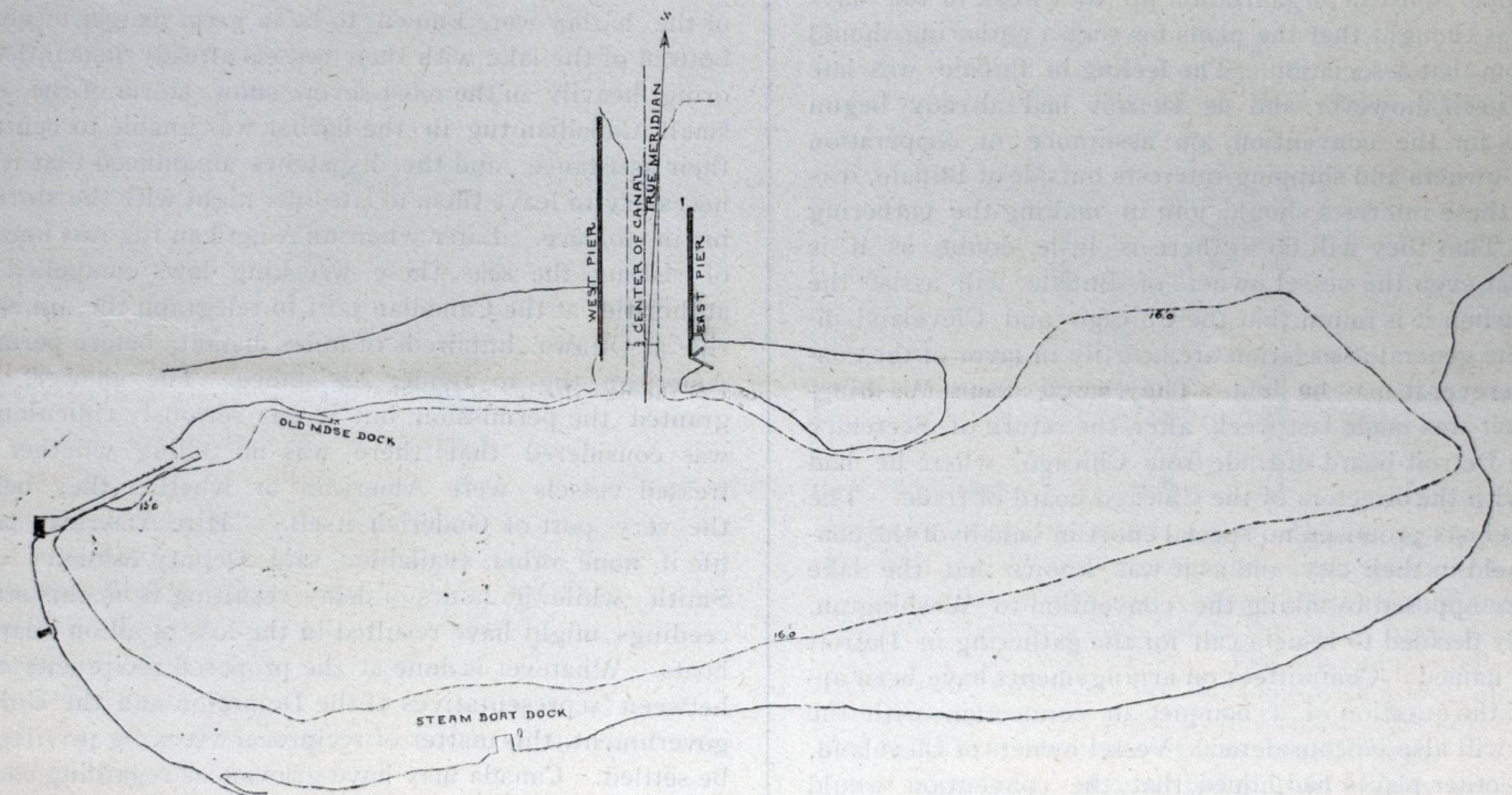
## No Need of a Water Gauge at Marquette.

Mr. Preston C. F. West, engineer of the Calumet & Hecla Mining Company, Calumet, Mich., calls the attention of the municipal authorities of Marquette to the fact that the height of Lake Superior above mean tide at New York is 601.78 feet and that the government engineers, in establishing this and other important matters regarding lake levels, caused land levels to be run from the sea *datum plane* up the Hudson river and along the lakes to Marquette, bench marks being placed at various points for future reference. He points out the location of a number of these marks in Marquette and suggests that with their aid a water gauge, showing variations in the level of Lake Superior, could be placed on the wharves at Marquette, where it could be consulted at all times. It has been said in this connection that such water gauges at Marquette, Duluth and other points on Lake Superior might be used to guide masters of vessels as to the depth to which they might load before proceeding with cargoes to the Sault canal, but such a scheme is not practicable and little benefit could come from it. Variations in the levels of the lakes, excepting the temporary rise and fall caused by winds, are gradual, and such of them as come in a single season extend over a long period, so that the draft of vessels navigating the Sault canal is not changeable by hours or days. The vessel master bound up through the canal is fully informed as to how deep he can load on the return trip, and water gauges at Marquette or Duluth would be of no use to him. If the municipal authorities desire to keep a record of the Lake Superior water level by means of the establishment of a gauge there is, of course, no objection to their doing so, but it is a question whether it would be any practical benefit to anyone. The government engineers on the lakes have for years kept records of the water in all places where it is necessary that they should be kept.

Send 75 cents to the MARINE REVIEW for a binder that will hold 52 numbers.

**Grand Marais Harbor, Michigan.**

At Grand Marais, Mich., nine miles east of Big Sable light, thirty-five miles east of Grand island and forty-nine miles west of Whitefish point a deep water harbor is now in readiness to afford shelter to vessels in the Lake Superior trade. The government has put a large amount of money into improving the deep water lake at this point and the construction of a channel entrance, and there is little doubt that many vessel masters caught in bad weather along the open stretch of coast in this vicinity will find reason to be thankful for the expenditure. We are indebted to Capt. W. L. Fisk, government engineer in charge of the work, for a blue print of the harbor from which the accompanying drawing was made. The width between the piers is 500 feet, and there is at this time a channel into the harbor midway between the piers having a width of 175 feet with not less than 17 feet of water in it. The dotted line indicating an increase in width of the dredged channel at the mouth of the piers shows also the 16-foot limit around the shore of the lake forming the harbor. The broad stretch of water within the dotted line is very deep, and altogether the harbor is already fitted as a safe place of refuge in accordance with the present Sault canal draft.



HARBOR OF REFUGE, GRAND MARAIS, MICH.

The full width of 500 feet between the piers will in time be dredged to a sufficient depth for Lake Superior vessels. The harbor is about a mile and a quarter long and 1,000 feet wide in its narrowest part.

There is another Grand Marais on Lake Superior. It is on the north shore in Minnesota and bears a strange relation to the harbor described here. When an appropriation was secured for the construction of the Michigan harbor the application was for "Grand Marais, Lake Superior" and in some way the word "Minnesota," indicating the state was attached to it. Strangely enough, the act passed in that way and the Minnesota harbor secured improvements that have, however, since proved beneficial to shipping in that locality.

**Some Information Regarding Obstructions.**

Some time ago the steamer Roumania struck an obstruction north of Squaw island, Lake Michigan, and damaged her bottom so that she was compelled to put into Cheboygan to avoid sinking. Her captain located the obstruction some distance north of Squaw island shoal, and it was claimed that the existance of a shallow spot in the locality had been known to fishermen. Capt. Geo. P. McKay of the Cleveland Vessel Owners' Association has since been engaged in an effort to definitely locate the obstruct-

ion. Through soundings made recently a spot with only 15½ feet on it has been found a mile and a half N. N. E. from the N. E. point of Squaw island. It is thought that this is the spot struck by the Roumania, as no trace of any obstruction could be found outside of that. The only person who still thinks there is an obstruction farther northward is Capt. Bouchard of the tug Duncan City, but the cross bearings that he gave would place the obstruction inside the 15½ foot spot found.

In the St. Mary's river north of Lime island and east of Round island a 13-foot spot is shown on the chart but one of the government officials who recently had occasion to make soundings at this point, says there is not more than 8½ feet on it. He adds that "vessels now bound up the St. Mary's river past Lime island go too far to the westward; they hold the coarse for Raber until westward of Round island, then bear northward and eastward, and consequently find themselves pretty close to the 13-foot spot on the chart. For some reason they are afraid of the upper end of Lime island, for which there is no reason, as the water is good close up to the wharf. The proper course is to go northwestward until the opening between Lime island and Round island bears due north, which course can be followed with entire safety."

**Wrecks and Heavy Losses.**

By far the most distressing accident in the recent snow storm was the loss of the schooner George C. Finney, owned by Capt. Thos. Riordan of Buffalo, who was drowned with a crew of six in the sinking of the boat.

The schooner Newsboy, which also went ashore in the storm of the 17th inst., has been given up as a total loss. The crew was saved after suffering many hardships. She was owned by Capt. Patterson of Chicago, registered 393 tons and was valued at \$10,000.

At South Haven the schooner Ellen Severtson, owned by Nicholson & Severtson of Ludington and valued at \$6,000, attempted to make the harbor and was driven ashore.

It is now more than probable that the schooners Sawyer and David Stewart, ashore near Cleveland and Fairport, will spend the winter on the shore of Lake Erie. The Sawyer has been abandoned by both owners and underwriters and little has been done toward releasing the Stewart.

The steamer Samuel Mather of Cleveland, sunk in collision with the steamer Brazil of Buffalo, was insured at Lloyds. The English underwriters are meeting with all the heavy losses this season. The boats came together in clear weather, about 8 miles out from Iroquois point, but there is nothing definite to be said of the collision. The Mather had a cargo of grain and was herself valued at about \$95,000.

## MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

JOHN M. MULROONEY, . . . . . } PROPRIETORS.  
F. M. BARTON, . . . . .

HOMER J. CARR, - - - Associate Editor and Manager Chicago Office,  
210 South Water Street.

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DETROIT's association of vessel owners, aided by other commercial bodies of that city, has taken upon itself the duty of preparing for the waterways' convention, which has been agitated in different parts of the lakes for some months past, and it is probably as well that such is the case. It is now proposed to meet in Detroit on Dec. 17. On account of a disposition on the part of the Buffalo managers of the Lake Carriers' Association to oppose the holding of a convention at this time, the movement lacked a proper spirit of organization up to a week or ten days ago, as it was thought that the plans for such a gathering should emanate from that association. The feeling in Buffalo was late in showing itself, however, and as Detroit had already begun preparations for the convention, on assurance of cooperation from vessel owners and shipping interests outside of Buffalo, it is fitting that these interests should join in making the gathering a success. That they will do so there is little doubt, as it is probable that even the vessel owners of Buffalo will assist the movement when it is found that the Chicago and Cleveland directors of the general association are heartily in favor of the convention wherever it may be held. The change from Washington to Detroit was made last week, after the return of Secretary Lane of the Detroit board of trade from Chicago, where he had consulted with the directors of the Chicago board of trade. The Chicago interests promised no special effort in behalf of the convention if held in their city, and as it was known that the lake carriers were opposed to taking the convention to Washington, it was finally decided to issue a call for the gathering in Detroit on the date named. Committees on arrangements have been appointed and the question of a banquet in connection with the convention will also be considered. Vessel owners of Cleveland, Duluth and other places had hoped that the convention would be held in Chicago, or in some western city where the influence of northwestern commercial interests could be secured, but they do not agree with that portion of the Buffalo owners who are of the opinion that the recommendations of the government engineers will be sufficient to secure appropriations from the next Congress, and they will on this account undoubtedly do all in their power to make the Detroit meeting a success.

INQUIRIES from the treasury department within the past few weeks would indicate that Secretary Foster proposes taking up some reforms in the different bureaus of the department that bear close relations to the merchant marine of the country. The changes proposed are those recommended by the International Marine Conference, most of which have also been urged at different times during the past several years by shipping organizations in different parts of the country. The Cleveland Vessel Owners' Association a short time ago was asked by L. G. Shepard, chief of the revenue marine, who is acting in the matter under the direction of the secretary, to forward to Washington an opinion as to that part of the recommendations of the conference relating to the inspection of sailing vessels and the management of the different marine bureaus, such as the life saving and inspection service and the bureau of navigation, under one head. Now it is announced that Passed Assistant Engineer McFarland

of the navy has been ordered to duty under the direction of the secretary of the treasury, to act with Chief Engineer Collins of the revenue marine, in special work in connection with the recommendations of the conference, in regard to the regulations governing the inspection of steam vessels. The officers are to go over the whole subject of the inspection of engines and boilers, and the examination of engineers, and are to report their conclusions in the form of a memorandum to the secretary of the treasury. Dissatisfaction with various features of the present inspection service has repeatedly manifested itself on the lakes, and the recommendations of the International Marine Conference which tend toward the establishment of a marine department of the government, taking in all of the marine bureaus of the treasury department, have met with favor. With the close of navigation shortly it may be expected that the vessel owners of the lakes will be heard from on these subjects.

No mistake was made in characterizing the wrecking laws of the lakes as barbarous and a disgrace to both Canada and the United States. A forcible illustration of the inhuman portion of these regulations was shown last week at Goderich, Ont., when the crews of two vessels flying distress signals within sight of the harbor were known to be in great danger of going to the bottom of the lake with their vessels already dismantled and laboring heavily in the most severe snow storm of the season. A small Canadian tug in the harbor was unable to venture out to their assistance, and the dispatches announced that it would be necessary to leave them to fate over night with the storm increasing in violence. Later when an American tug was found capable of risking the seas, these wrecking laws compelled the local authorities at the Canadian port to telegraph the minister of marine at Ottawa, hundreds of miles distant, before permitting the American tug to render assistance. The answer, of course, granted the permission, but it was seriously ridiculous when it was considered that there was no telling whether the distressed vessels were American or whether they belonged to the very port of Goderich itself. "Hire American tug to save life if none other available," said Deputy Minister of Marine Smith, while the hours of delay resulting from this strange proceedings might have resulted in the loss of all on board the two boats. Whatever is done at the proposed reciprocity conference between representatives of the Dominion and the United States government, this matter of reciprocal wrecking privileges should be settled. Canada may have grievances regarding coast regulations on this side, and if so the representatives of our government should relinquish a great deal when the price at stake is the lives of seamen in the lake marine.

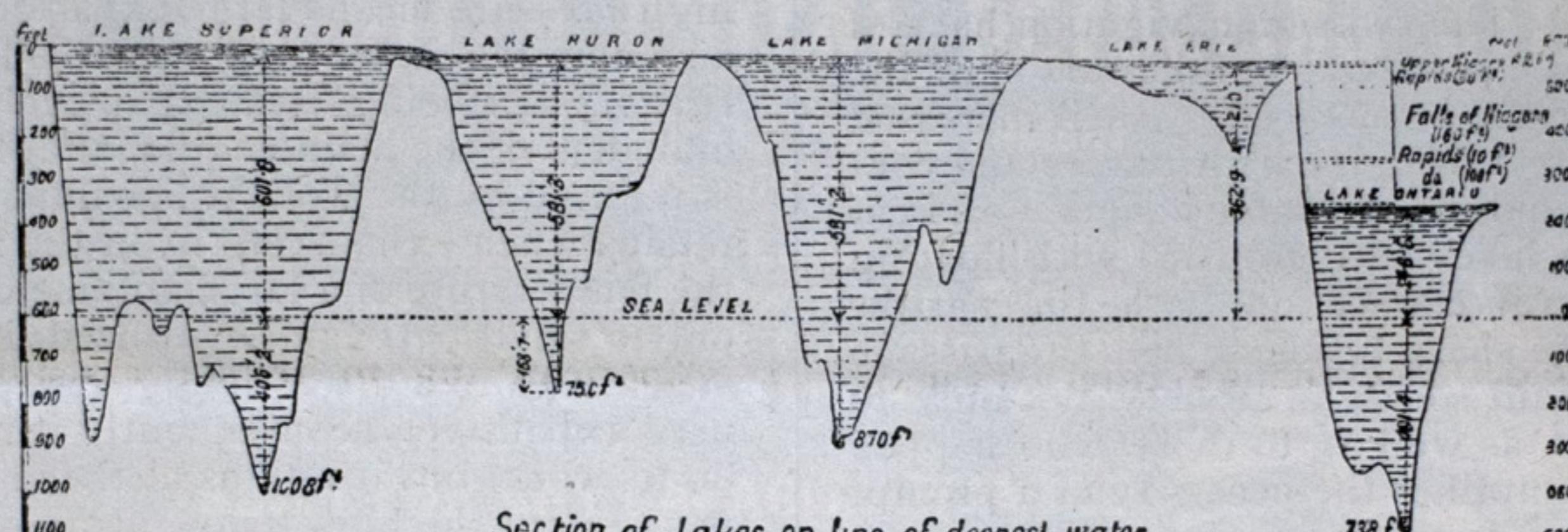
IN OPPOSING the movement for a waterways' convention the Buffalo managers of the package freight lines have made an opening for the charge from shipping interests in other parts of the lakes that the opposition is based on the proposition to discuss at the convention the question of an outlet from the lakes to the Atlantic an improvement that might be expected to act against Buffalo's great terminal establishment and its relation to the great railway system between that city and the seaboard. This should not be so, as the convention movement proposes only a full and free discussion of the great question of a seaboard outlet while there is another important object in view in the completion of improvements already begun on the lakes.

A decision to the effect that Canadians cannot evade the alien contract labor law by simply declaring intended citizenship, while still keeping their families and maintaining their actual residence in Canada, has been rendered by Superintendent of Immigration W. D. Owen. A declaration, he says, is of no avail in securing employment in the United States. This decision may have an important bearing on residents of Canada holding official positions on lake steamers.

## Some Data on Water Levels.

At no time in the history of lake navigation have the shipping interests been hampered as much by low water as during the season just drawing to a close, and though the trouble is fully understood to be due to natural causes, that result in a fluctuation in the lake levels from year to year, it must be admitted that serious attention has been given in some quarters to schemes for relief from the difficulty. The problem of relief, based upon any attempt to raise the water level, seems beyond engineering skill, however, even from a casual glance at some of the calculations in the reports of the lake survey regarding the area of basins, area of surface, relative height, discharge, etc. The accompanying engraving, a section of the lakes on line of deepest water, together with the following table, compiled from the latest and most authoritative sources, will show some of these calculations:

LAKE.	Elevation above mean tide.	Mean discharge cubic feet per second	Area total basin, sq. miles.	Area lake surface, sq. miles.
Superior .....	601.8	86,000	82,800	31,200
Huron and Michigan .....	581.3	225,000	116,600	46,400
Erie .....	572.9	265,000	41,835	10,435
Ontario .....	246.6	300,000	30,790	7,280
Totals.....			272,025	95,315



Section of Lakes on line of deepest water

Some idea of the vastness of these great bodies of water can be gained from the fact that at a meeting of the Western Society of Engineers in March, 1889, it was agreed that 10,000 cubic feet of water per second taken from Lake Michigan for the proposed Hennepin canal would not lower the surface of Lakes Huron and Michigan (they are of the same level) more than 3 inches per year if considered independently of the natural outlet and without inflow or evaporation.

The elevation of the lake surfaces for any given year is a function of the volume of rainfall on the drainage basin, the amount of evaporation and the outflow through the river system. The rainfall and evaporation for Lakes Michigan and Huron each vary from 20 inches to 30 inches per annum, but are seldom equal for the same year. Years of maximum rainfall are often those of minimum evaporation and vice versa. For this reason the rainfall and water level curves are seldom symmetrical for any two consecutive years.

First mate: "Hold on to that line there."

Growling Decky: "Aye, sor." adding a diabolical grin as he saw the windlass chewing up the line on a spile forward.

First Mate: — | \ — / — what you trying to break that line for?"

Growling Decky: (To himself) "Never break a line less I'm told to, sor."

## Good Words From Scotland.

## OFFICE OF THE STEAMSHIP.

2 Custom House Chambers, Leith, Scotland.

EDITOR MARINE REVIEW: I have on more occasions than one admired the very fine supplements which you from time to time issue with your admirably conducted journal. The last number contains a supplement of the Goodrich Line Steamer Virginia, which for artistic beauty and excellence, eclipses, in my opinion, any you have yet issued, and I cannot but congratulate you on the enterprise you are showing.

I am, Yours Very Truly,

JOHN LOCKIE, EDITOR.

## Around the Lakes.

The owners of the Conemaugh state that the price charged by the Detroit wreckers for raising her, figured by the day, was lower than several bids on the job, which were sent them immediately after she was sunk.

Hiram Estelle succeeds John Kelley as master of the steamer J. H. Prentice, Thomas D. McBride succeeds Jacob Burnstein as master of the City of New York, and James Sanford succeeds A. D. Campbell as master of the Walter Vail.

In his annual report Gen. Poe discusses the question of a dry dock at the Sault, and says the cost of one there will be \$343,000. In the State Treasury at Lansing there is \$65,000 set aside for that purpose. He discourages the project.

The Detroit, Belle Isle and Windsor Ferry Company has let a contract to the Detroit Dry Dock Company for a ferry boat to be built during the winter and to cost \$50,000. The boat will engage in passenger service with the other steamers of this line on the Detroit river.

Congressman Haugen, representing the Wisconsin congressional district of which Superior is a part, says he will introduce at the earliest possible time in the next session of Congress, a bill creating a new customs district on Lake Superior and making Superior a port of entry.

W. C. Stiles, Warren, Ohio, employs about 80 men in manufacturing lumber for shipbuilding. The daily consumption of his mills averages 20,000 feet, and he carries a stock of about 2,000,000. Not long since Mr. Stiles shipped to Boston

about as long a piece of ship timber as has ever been transported. It was 62 feet long and 24 inches square.

A number of the canal schooners that are thinning out with the gales of each succeeding fall on the lakes, have seen service in different parts of the world. The schooner Estelle, which went to pieces at Maristee a few days ago with a loss of three lives, was built in 1873 by Capt. J. L. Higgin, now of Chicago, and had made several ocean voyages from Chicago.

The wooden steamer building at Morley & Co.'s shipyard, Marine City, for service on the Atlantic coast will be named J. J. Hill. She is 178 feet keel, 40 feet beam and 17 feet hold, and will have a capacity of about 1,250 tons. Her engines are fore and aft compound, 20 and 40 with 30-inch stroke. She will be launched in time to receive her machinery at Detroit, during the winter.

According to estimates of Gen. Poe, 275 vessels, valued at \$23,294,000, were delayed 327 days and 5 hours by the wreck of the Peck. The direct expense to the government of raising the blockade was \$6,455. In his report to the department on this subject Gen. Poe says: "It all resolves to this, that unless navigators exercise the utmost care and are willing to yield something to each other, such accidents may be expected and are sure to come. They happen frequently, but the special attention of the public is given to them only when the effects are so far reaching and so costly as in this instance."

The Sheriffs Manufacturing Company has had its hands full of repair work lately and has been running night and day. They recently placed a new 6 foot wheel on barge J. A. Seymour Jr. also a new shaft, stern bearing, stern pipe and new outboard shaft on steamer Chauncy Hurlbut, a new crank in steamer Douglas, new stern bearing on steamer Chas. A. Street, new crank on steamer Minnesota, new eccentric on steamer Hattie B. Pereue; also new wheels on steamers W. H. Wolf, George H. Dyer, F. & P. M. No. 5, M. F. Butters, Allmendinger, S. K. Martin, three Milwaukee tugs and the Ionia. One was shipped to Cleveland parties, one to Cheboygan four to Duluth and three to New Orleans, during this month.

### Value of the Independent Condenser.

"The Superiority of Independent Condensers for Marine Engines on the Lakes" is the heading of an article by J. F. Holloway, in a recent number of the American Machinist. The manifest fairness with which he treats the subject and the practical knowledge which Mr. Holloway has of lake marine engineering entitles it to partial reprint in the REVIEW, which has contained several papers on this subject.

The article begins by saying that the value of any piece of mechanism is the difference between the sum of all its good features, minus its bad ones. "It will be conceded by all, except possibly the inventors of special contrivances, that all machines possess both good and bad features." It was not needed to preface what is to be said about independent condensers, as separate and distinct from other forms of machinery, but only to remind the reader that while it may be possible to prove many things as being theoretically failures, yet the fact often remains that they are practically and commercially a success.

"In the first place, an independent condenser of the Worthington type is a separate and distinct mechanism, having only one function to perform, and one which is in no wise greatly affected by the motion or rest of any other part of the machinery of the boat. The independent condenser can be set in motion before the main engine is started, and it can remain in action after the main engine is at rest, without involving any particular care from the attendant engineer. The risks of navigation have of late years been largely increased, not only by the reason of the large number of steamships afloat, but as well by their increased size, which makes their passage through narrow rivers and contracted waterways a frequent and unavoidable danger. Then, again, the small harbors of the lakes are crowded with floating craft of all kinds, which, taken in connection with the narrow space between the piers and the sharp bends, makes the passage of heavily loaded boats a constant source of anxiety, not only to the master of the steamer, but as well as to those who happen to be near him. This fact exemplifies the necessity of a prompt response of the engines of a ship to the requirements of a somewhat at times dangerous situation.

"Having thus briefly outlined the necessities and requirements of a navigation which is entirely familiar to those living on the western lakes, but quite unknown elsewhere, it will be proper to indicate in what manner the difficulties of the situation are helped by the use of an independent condenser, instead of the attached air-pump and condenser.

"In the first place, the attached air-pump and condenser being driven by the main engine is dependent alone on the same for its movement; the independent one, as has been shown, is not. In the compound, triple-expansion or simple-condensing engine, a large part of the total power of the engine is dependent upon the efficiency of the vacuum produced by the condensation of the steam used, and it is obvious that in starting such an engine its first movements must of necessity be slow and sluggish, until the engine has made a sufficient number of revolutions to establish a good vacuum, the number of revolutions and the length of time depending largely on the condition of the air-pump and its connections. To sum up the objections to the attached air-pump and condenser on a lake engine where it must be so often stopped and started, it may be added that the attachment of the air-pump to the main engine increases the number of parts of the main engine liable to get out of adjustment, and it prevents that ready access to the crank pins and main journals, which, at the high speed they are now run at, require not only constant care and attention, but also ready access for examination and repairs. The high speed now required of the main engine greatly increases the strains on the air-pump beams, links, buckets and valves, and the high velocity with which the injection water is lifted and forced through the air-pump, often causes rupture of the air-pump cover, its connection pipes and valves. This engine speed has of late years so increased, that the usual large rubber valve of the air-pump bucket, foot and discharge valve can be used now only at a very considerable risk, and it involves, as well, the selection of the very best material. At every stoppage of the engine, the injection must be closed, and again opened when the engine is set in motion, and is it to be wondered at, that, when this labor goes on for hours, it is possible that the injection valve may at times be forgotten, and

the result a flooded air-pump, and, as it sometimes happens, a broken one, should the engine be put instantly into rapid motion.

"The operation of the independent condenser as connected with a lake marine engine, being to some extent a new departure, as applied to such marine engines, it may be well to explain wherein it possesses merits that should commend it to a wider use. In the first place, an independent condenser, when in use, will produce a constant and reliable vacuum on the engine at all times, irrespective of the action of the main engine. The degree of vacuum produced by the independent condenser is not limited by any consideration of the temperature of the feed water; therefore, it can produce the highest attainable results, varying from 26 to 27 or more inches, instead of 22 to 24, as is commonly carried with the old-style air-pump and condenser, and thus adding largely to the power of the main engine as well as to its instant availability. The moderate and steady action of the independent condenser is a guarantee of its endurance and reliability, of great value to a steamer, especially in times of danger.

"The objection that will be raised, and possibly the only one, will be that the independent condenser, which is in so many ways desirable, does not use steam economically; or, in other words, less steam will be used when the air pump is attached to the main engine. It always takes a certain amount of power to produce a certain amount of work, but it does not always take a certain and fixed amount of steam to do a certain and fixed amount of work, for in some cases the steam is used to its best advantage, while in others it is not. The value of steam is in its temperature; high temperature means high pressure, and high pressure means large expansion. In driving an attached air pump the steam used is worked at its greatest economy, by reason of its being used expansively in the steam cylinder or cylinders of the main engine, and its pressure and temperature is reduced by the work it has done, but the final temperature it retains when exhausting is, in the main, thrown away in raising the temperature of a large volume of injection water, of which only a small part can be utilized in feeding the boiler. The steam used in a direct-acting independent condenser can not be used expansively, consequently it requires a larger volume to do its work, but it retains at the end of its piston stroke a larger per cent. of the high temperature it originally had, and, if it were then exhausted into the atmosphere, there would, of necessity, be a great loss of heat, which always means loss of coal in such cases. But by the use of a coil or tubular heater, through which such a portion of the injection water is forced as is required for feeding the boiler, the exhaust steam from the independent condenser is utilized to its full extent by extracting from its remaining heat and transferring it to the boiler again, through the medium of the feed water, and therefore there is virtually no loss of steam or power beyond what is required to discharge the injection water overboard, and overcome the resistance of the working parts of the machine. By using this feed water heater, the steam from the auxiliary feed and other pumps can also be returned to the boiler, thus saving what heat otherwise would usually be wasted in their exhaust steam.

"To sum up in brief the advantages arising in the use of independent condensers on lake marine engines, would be to say that by their use the highest obtainable vacuum can be had in the cylinders of the main engine, and the highest degree of temperature be at the same time imparted to the feed water, thus increasing the power of the boiler, and contributing greatly to its durability. The slow speed at which such a condenser, when properly selected, runs, insures freedom from undue wear, and liability to derangement. By its use the main engine is rendered more accessible and is relieved from a serious source of danger, to which it otherwise would be liable, by reason of its being connected under high speeds with the moving parts of the ordinary attached air pump and connections. By its use the condenser can be placed at any convenient location without reference to the main engine. And more than all else, by its adoption any condensing engine can be as rapidly and promptly handled as in the old times were the smart high pressure lake engines, which for size, power, endurance and durability have never since been equaled."

For the benefit of readers of the REVIEW who are on the lakes over half the year, a special rate of \$1 for six month's subscription is made. The paper will be sent to any part of the United States or Canada at this rate and the address may be changed at any time. Order by mail before leaving boat for the winter.

**Cleveland Matters.**

The Cleveland Dry Dock Company has begun preparations for extensive alterations to its dock, to be made during the coming winter.

B. B. Inman of Duluth has purchased the tug Joe Dudley from Capt. C. E. Benham and others. The terms have not been made public.

The Trout wheel put on the steamer John Craig, the owners claim, has increased the speed of the boat half a mile per hour and has made a saving of twenty-five tons of coal per trip.

The steamer George King and consort were compelled to spend three days of last week in Clayton making repairs on damage done her bilge by striking a rock abreast of Sister light, on her passage up from Ogdensburg.

Capt. C. M. Davis of the steamer R. P. Flower reports to the Cleveland Vessel Owners' Association that after leaving Gladstone on the 4th inst. with grain and while going out of the bay, his vessel struck bottom a quarter of a mile south of Corona buoy. There was a big sea from the southwest at the time. He thinks that owing to the shoal water in the bay the buoy should be moved at least a quarter of a mile south of its present location. The Flower's shoe was bent and she was obliged to tow down, entailing a loss of about \$2,500.

The Canton Steam Pump Company writes as follows: In order to correct a wrong impression caused by exaggerated reports through the daily papers of the fire, which occurred Nov. 8, by which the warehouse in which we stored our manufactured product and a large portion of our raw materials, was consumed, we are pleased to say that this misfortune has not caused us to cease operations in the factory for one moment. The stock consumed was telegraphed for immediately and parts of it began to arrive on the day following. We are receiving orders in increased numbers and shall be able to take care of them all. Our business has been exceptionally prosperous the past season and it gives us great pleasure to correct any wrong impression that may be existing."

The action of the board of supervising inspectors of steam vessels, at a special meeting in Washington, Sept. 28, in raising the constant for corrugated furnaces from 12,500 to 14,002, permits of an increase in pressure of 12 per cent. over the old formula on boilers using corrugated furnaces. The Continental Iron Works, Brooklyn, N. Y., are sole manufacturers in the United States of corrugated flues for boiler furnaces.

THE DETROIT TRIBUNE (WEEKLY) AND THE MARINE REVIEW, ONE YEAR, \$2, THE PRICE OF ONE.

## McMYLER MANUFACTURING CO., 180 COLUMBUS STREET, CLEVELAND, O.

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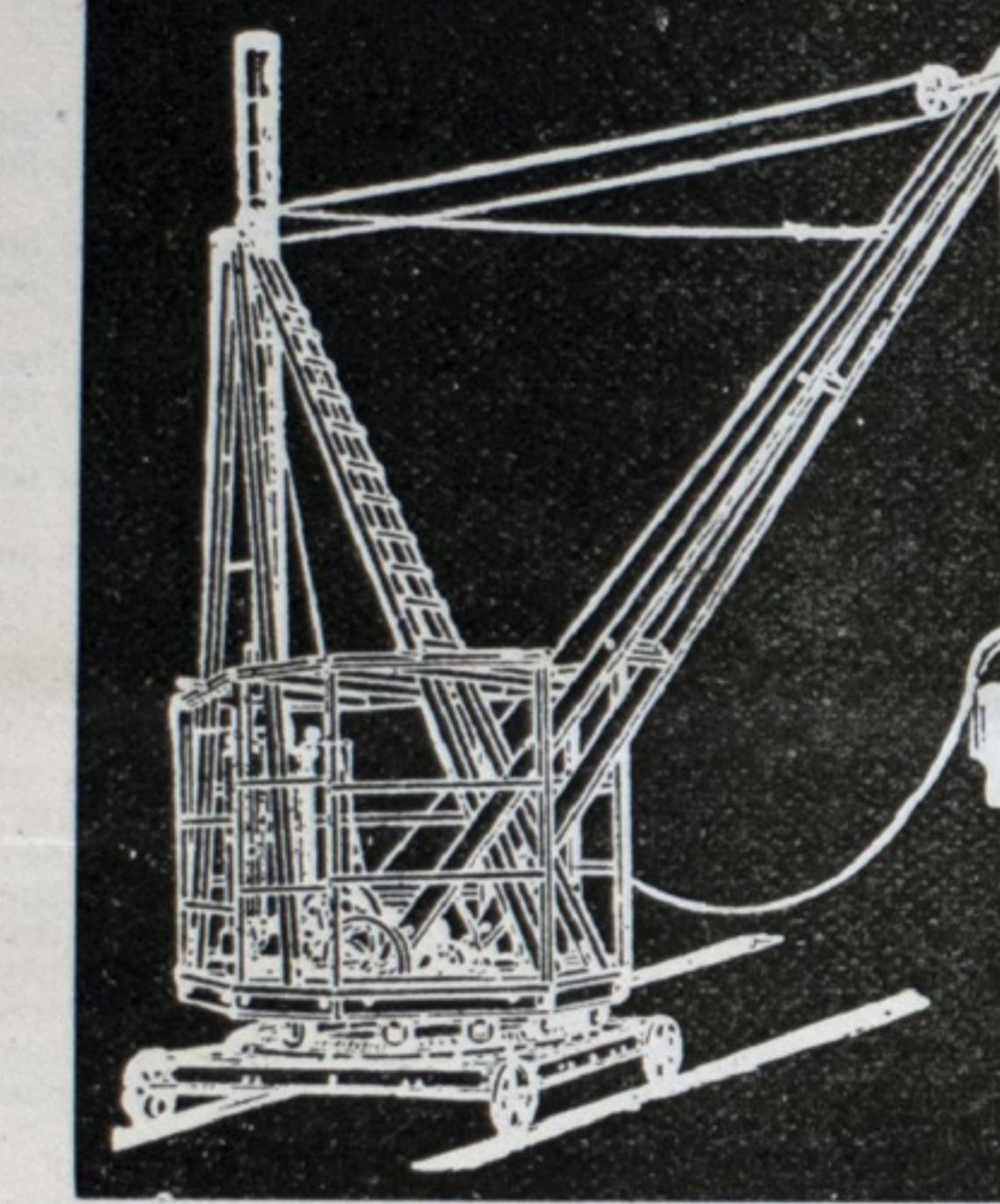
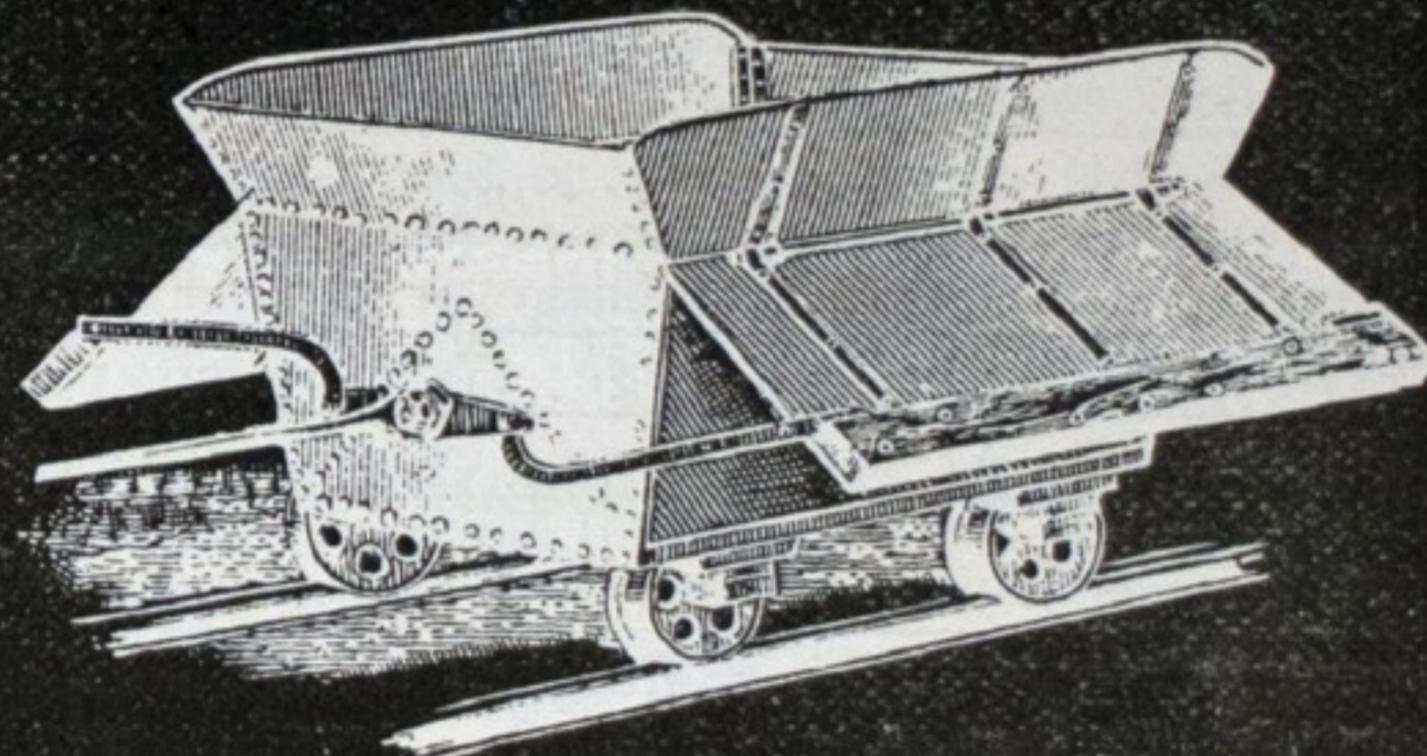
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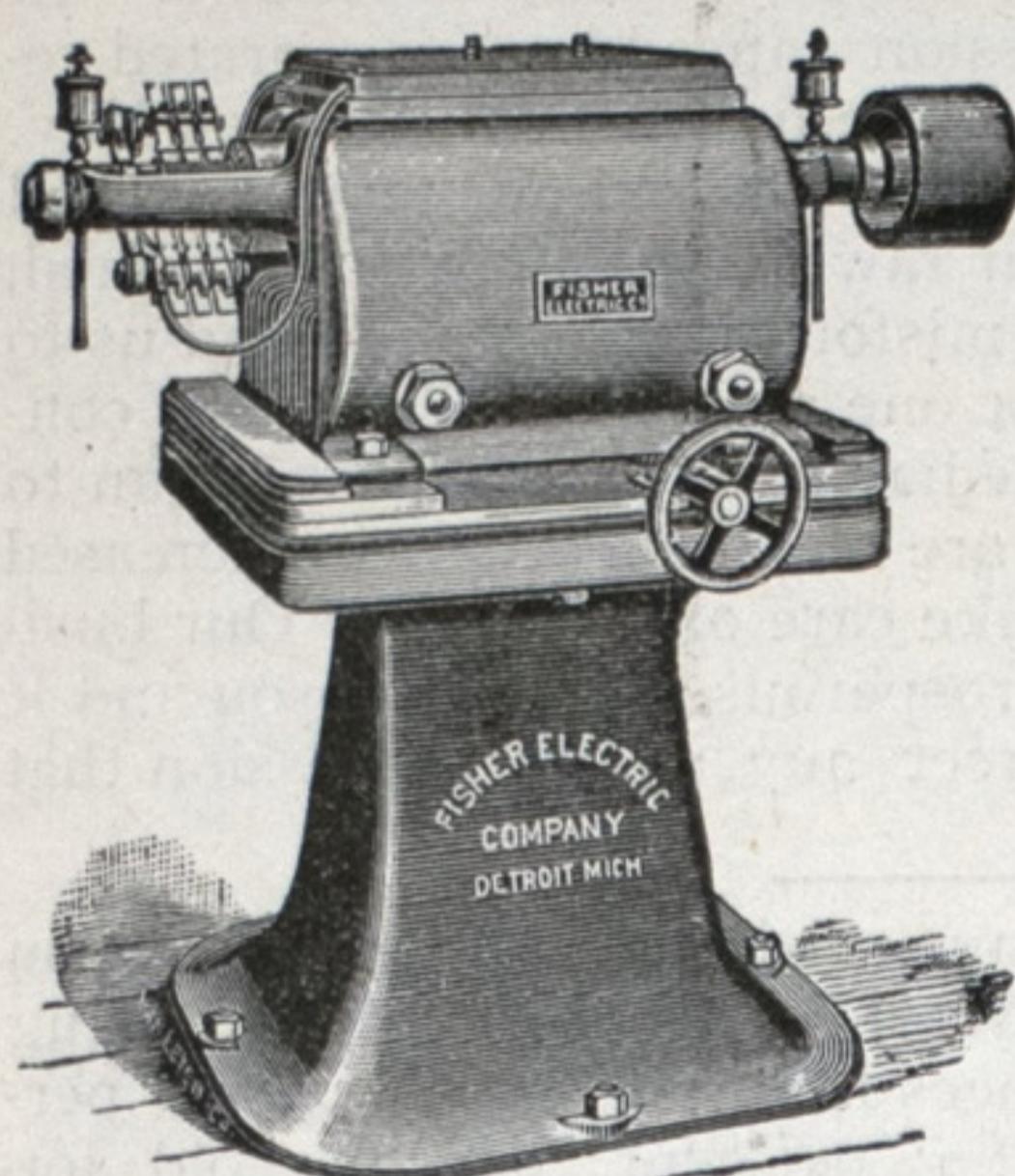
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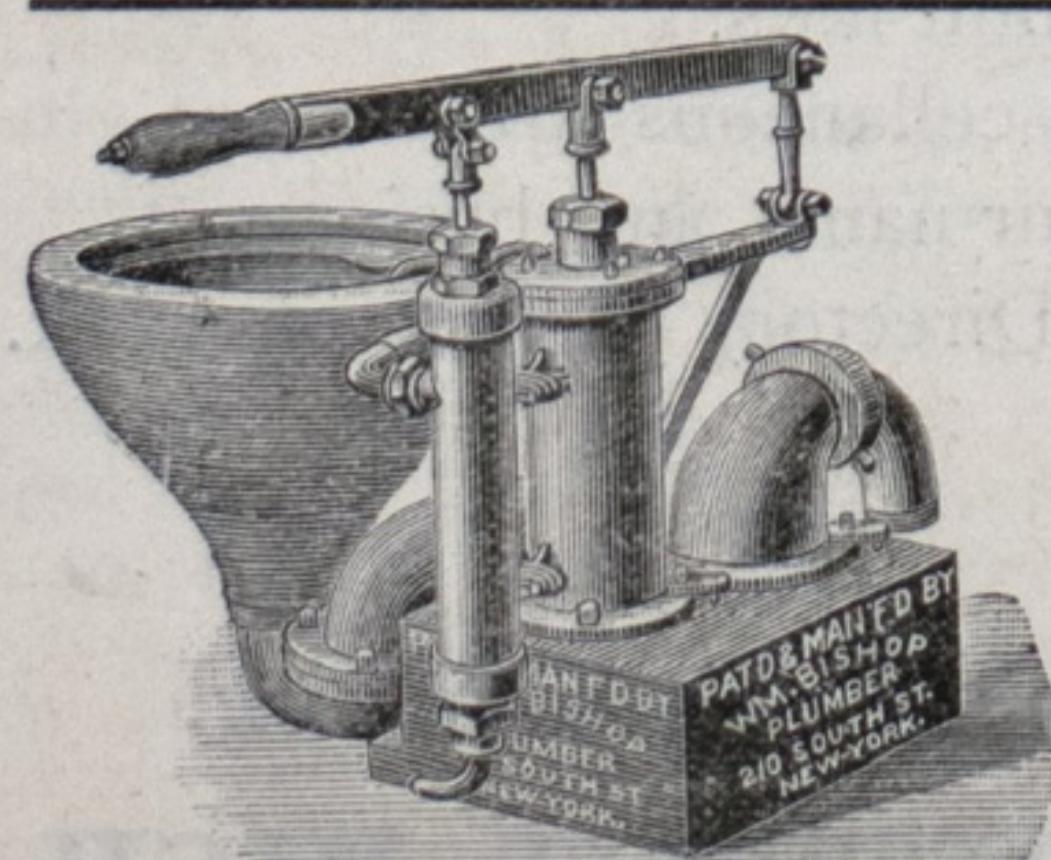
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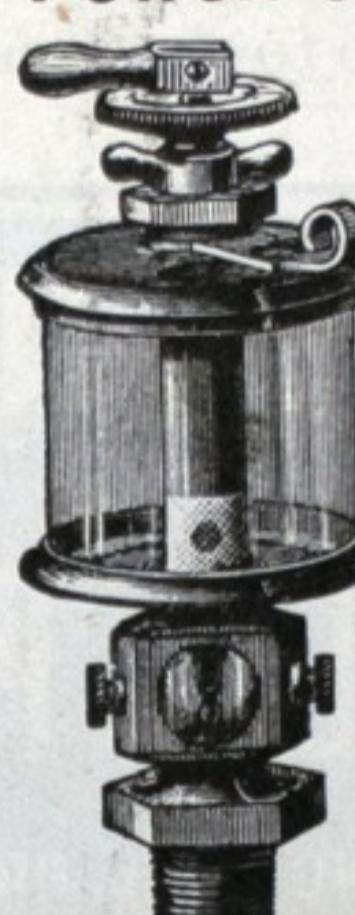
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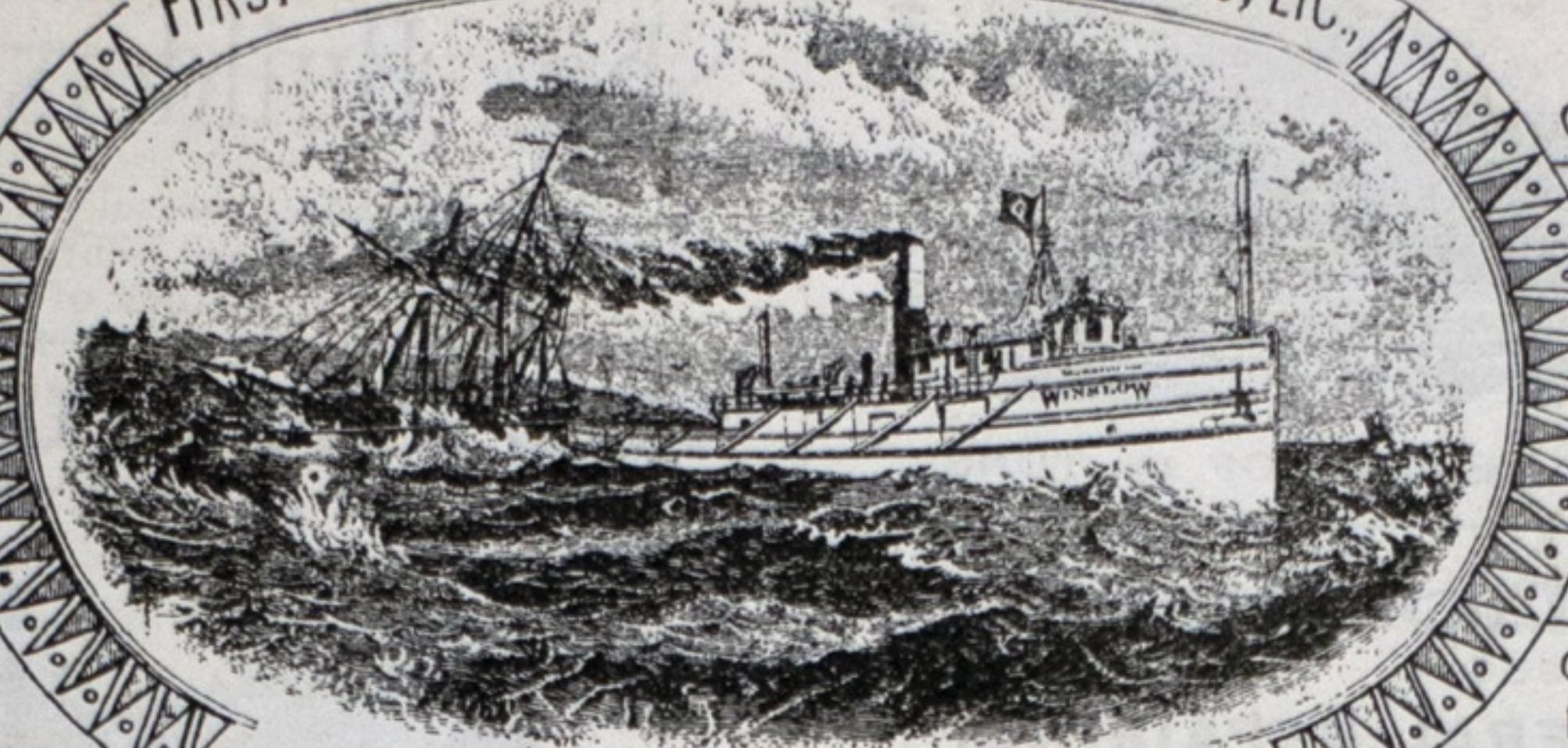
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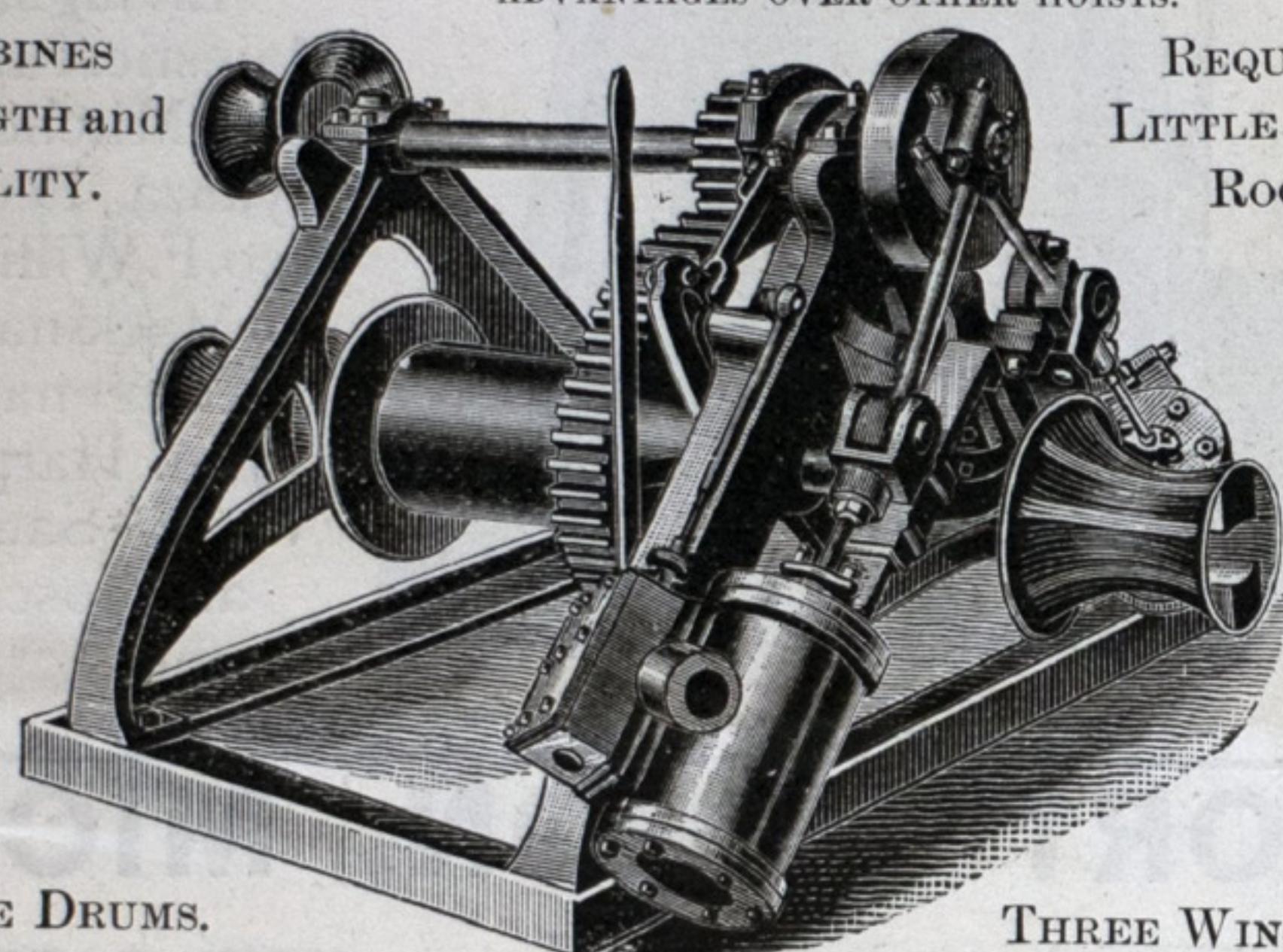
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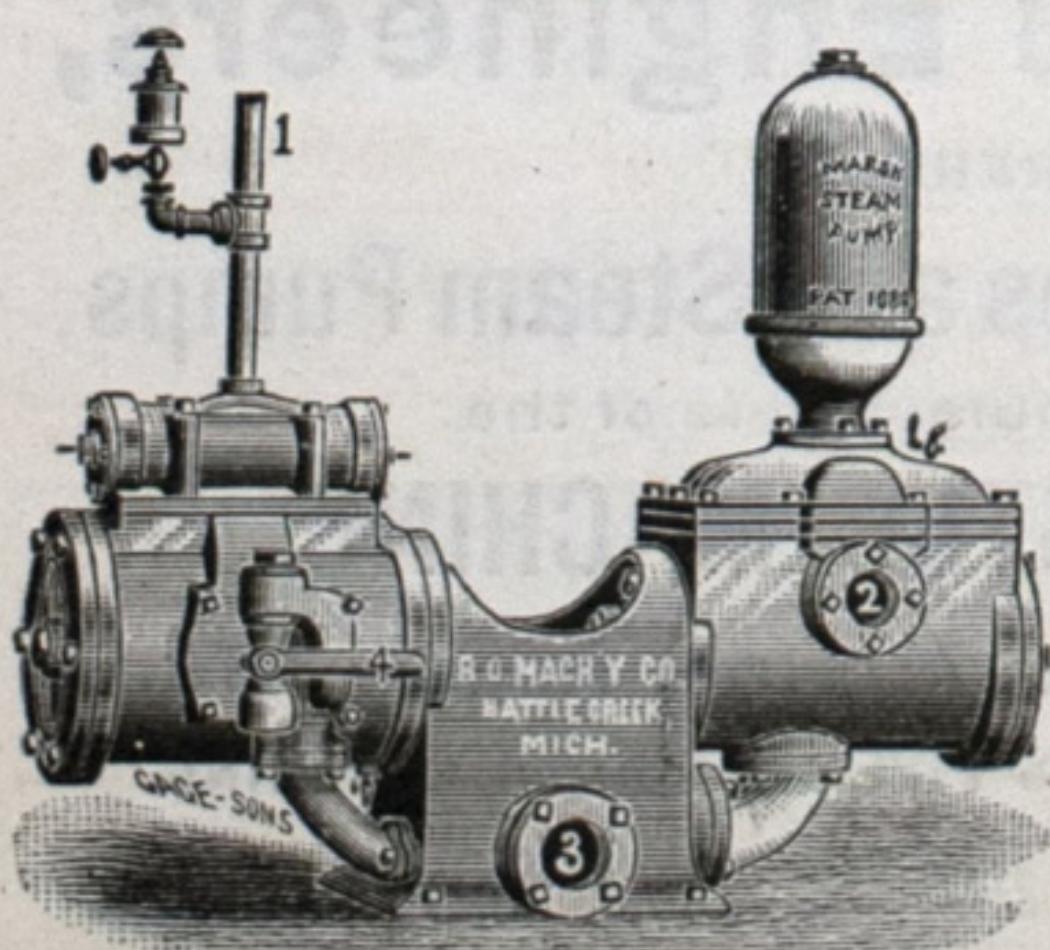
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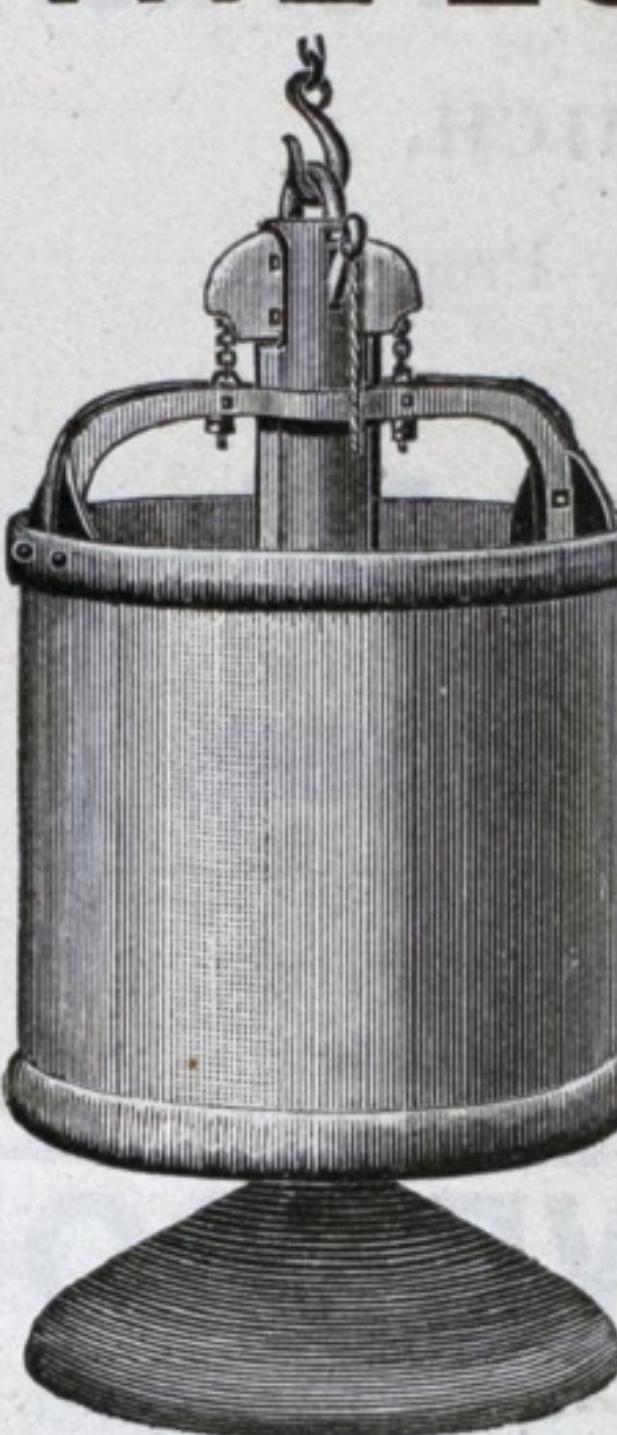
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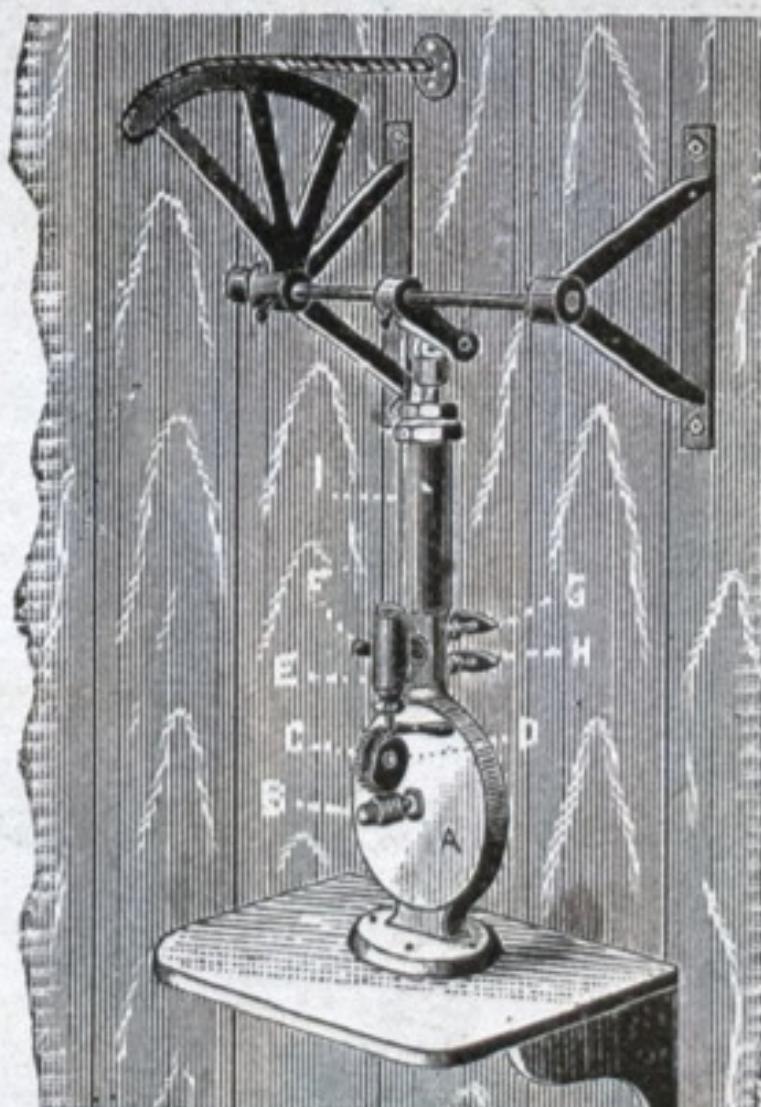
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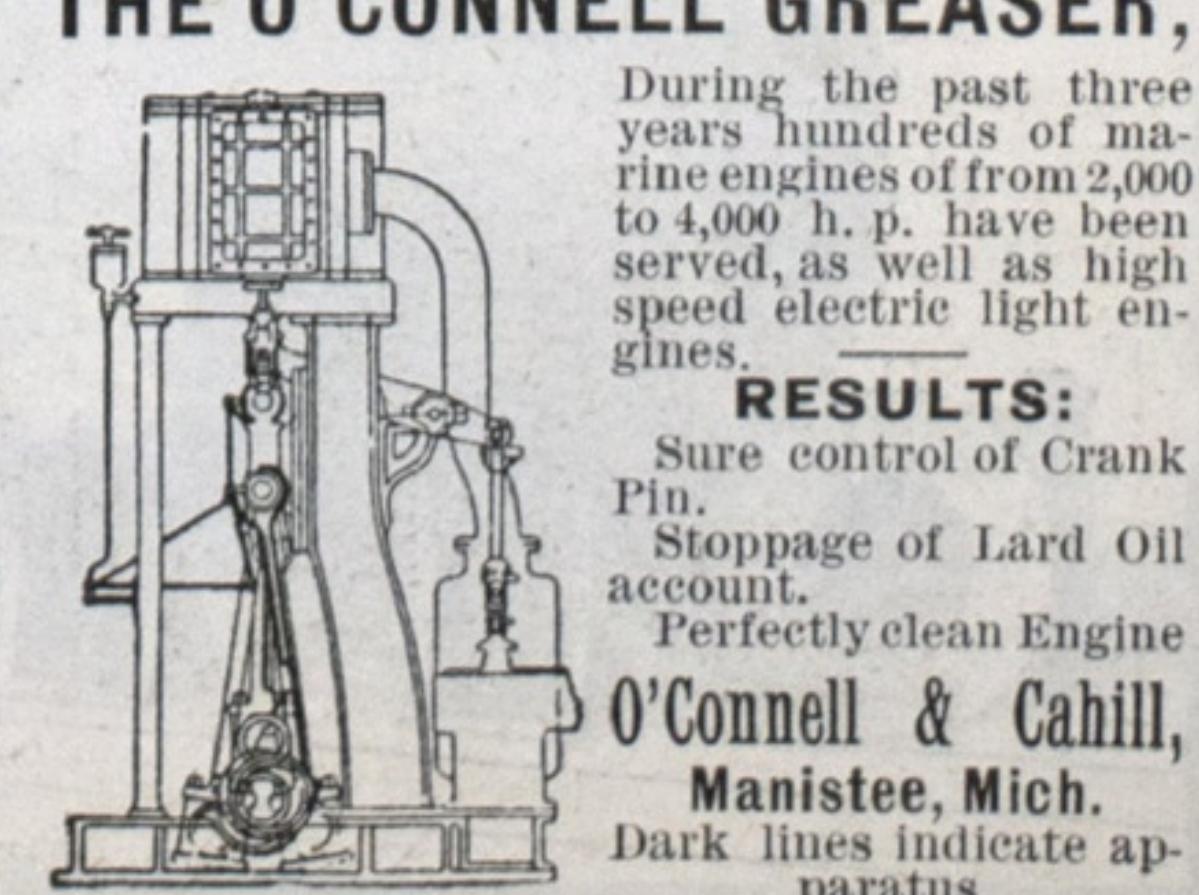
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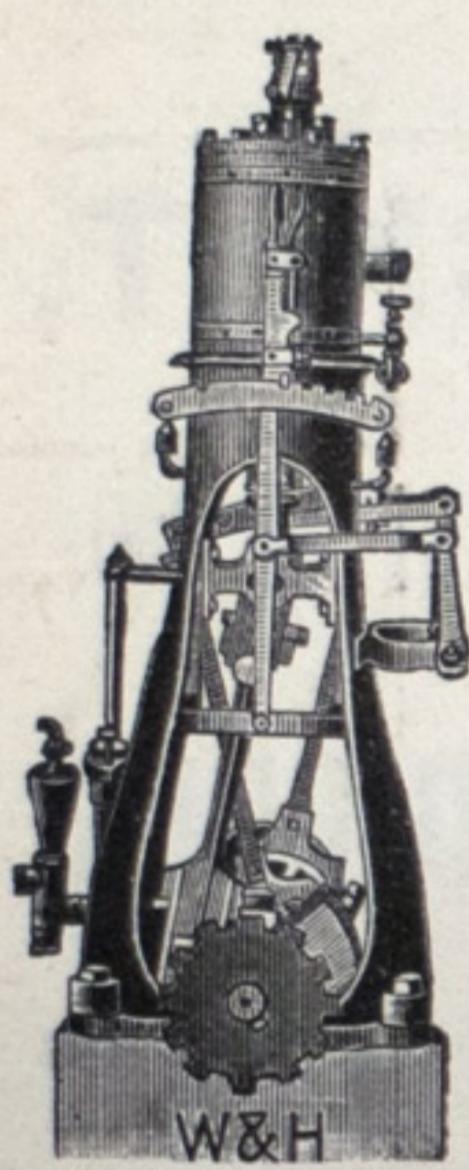
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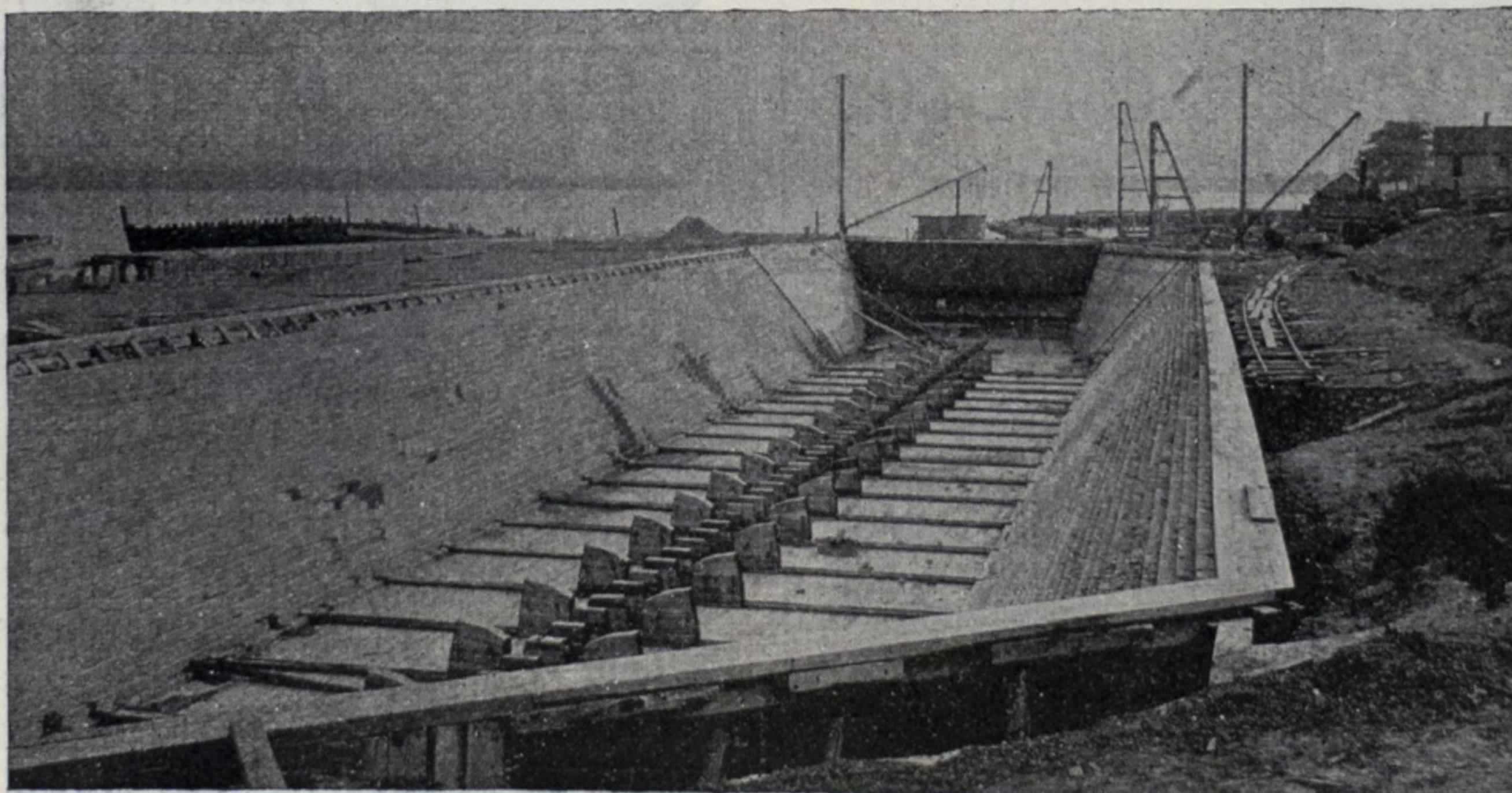
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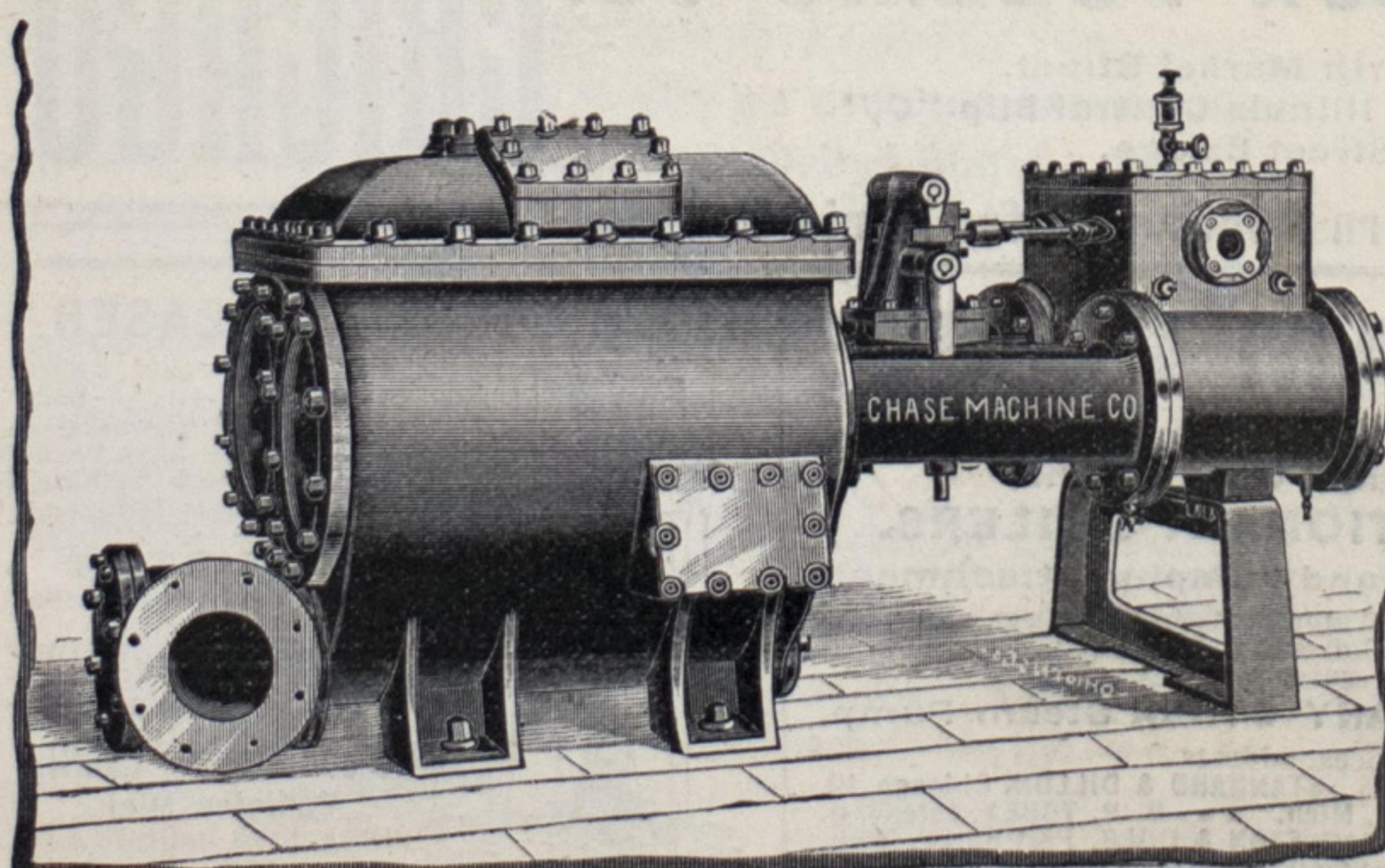
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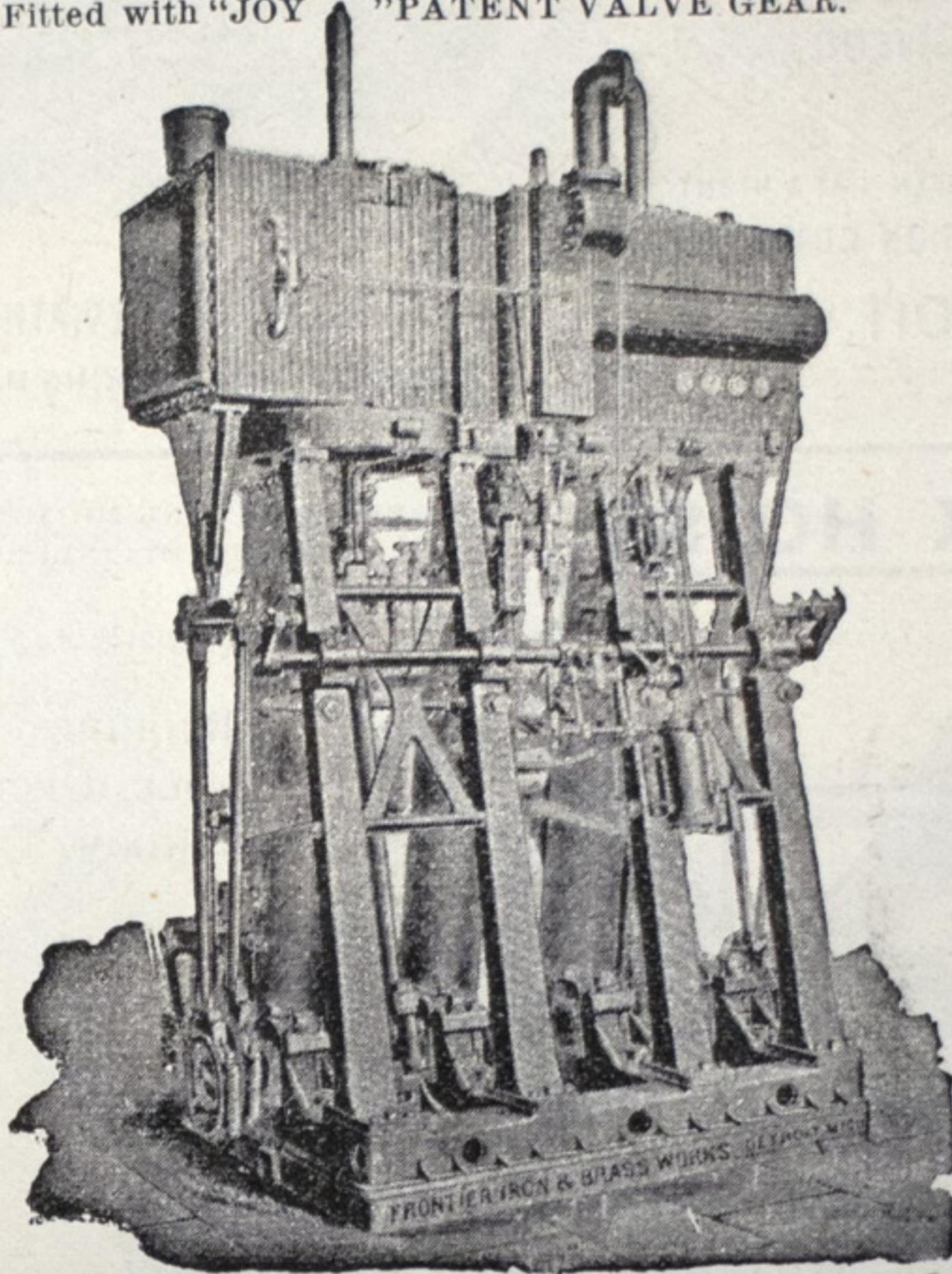
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